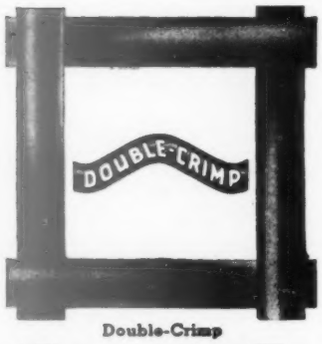
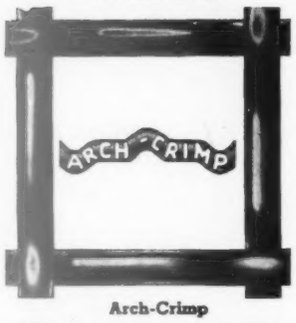
IT
AND
NOVEMBER, 1945
TOTAL NET PAID CIRCULATION NOW AT NEW ALL-TIME PEAK — OVER 8,000
FOR 28 YEARS THE LARGEST PRODUCER CIRCULATION IN THE FIELD

FEB -4 1946

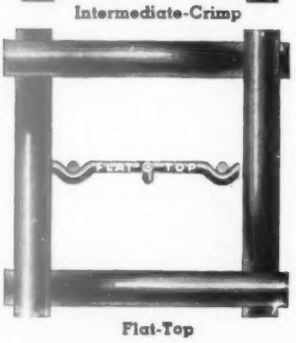


Double-Crimp



Arch-Crimp

Intermediate-Crimp



Flat-Top

"The Perfect"

Wire Cloths and Screens

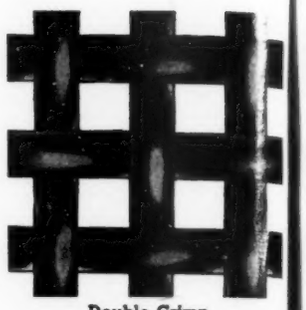
We have been specialists for many years in the making of precision wire cloths, wire screens and woven wire products.

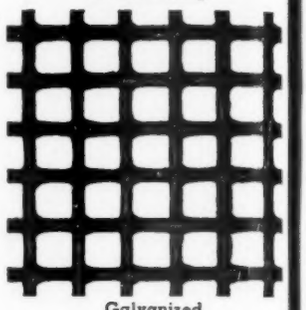
We apply our same precision principles in fabricating wire cloths into finished industrial units, for production or processing equipments or for permanent parts of countless industrial products.

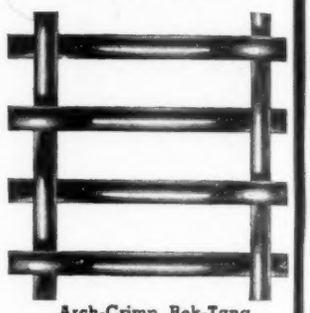
We invite your inquiries for wire cloths of all commercial metals or alloys or weaves, in continuous lengths or cut to size, or processed to meet your individual requirements.

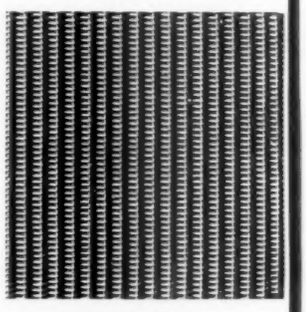
"Perfect" alloys and metals	"Perfect" Wire Cloth weaves	"Perfect" Wire Cloth Processing	"Perfect" Wire Cloth products
Super-Loy	Arch-Crimp	Bending	Baskets
Steel	Coiled	Binding	Circles
Galvanized	Double-Crimp	Brazing	Cones
Tinned	Double-Fill	Calendering	Crates
Stainless Steel	Dutch	Clinching	Cylinders
Nickel-Chromium alloys	Filter	Cutting	Discs
Aluminum	Flat-Top	Dipping	Forms
Brass	Herringbone-Twill	Dishing	Leaves
Bronze	Intermediate-crimp	Flanging	Lengths
Commercial Phosphor	Rek-Tang	Flattening	Panels
Copper	Selvage-Edge	Forming	Pieces
Monel Metal	Straight-Warp	Framing	Racks
Nickel	Stranded	Galvanizing	Ribbons
Any special alloys available in rod or wire form	Sta-Tru	Painting	Rolls
	Triple-Warp	Shearing	Sections
	Twilled	Slitting	Segments
	Twisted-Fill	Trimming	Spaces
	Twisted-Warp	Arc-Welding	Strips
		Gas-Welding	Template shapes
		Spot-Welding	Trays

We will follow your specifications and blue-prints exactly as your production engineers have prepared them—or we will submit suggestions for your approval.


Double-Crimp


Galvanized

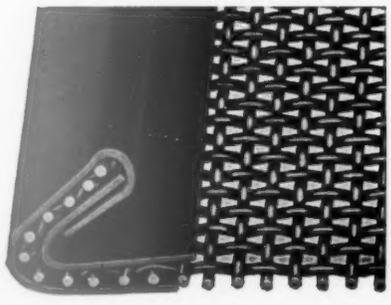

Arch-Crimp Rek-Tang


Dutch Weave

The LUDLOW-SAYLOR WIRE COMPANY

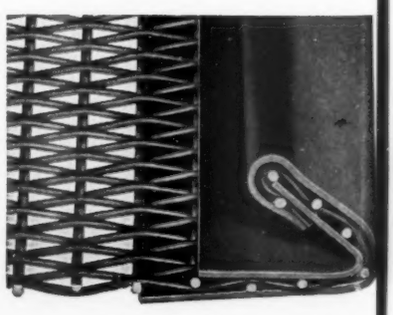
Newstead Avenue & Wabash Railroad

ST. LOUIS 10, MO.



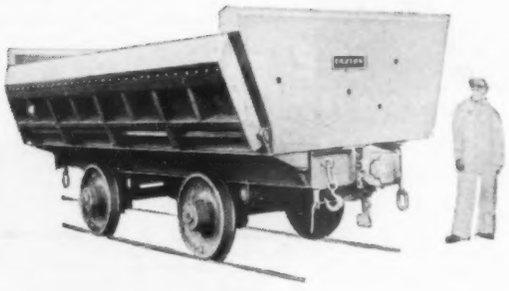
LUDLOW-SAYLOR PRECISION FABRICATING makes vibrating-screen decks and jackets that are easily handled — quickly installed — need fewer adjustments and renewals.

Illustrations suggest only a few of the many available types of wire cloths and woven wire screens, which may be custom-finished with attachments to fit your particular processing installations.



After your FIRST MILLION TONS

You might be like one user who installed EASTON TRAILERS in 1941. On that operation our engineer has just reported a total haul of almost 1,000,000 tons of rock *per unit*—with repair costs down near one hundredth of a cent per ton. We don't consider you a satisfied customer until peak efficiency like that is assured. We can relax after your first million tons.



EASTON MODEL CB-1520 QUARRY CAR

Featuring an automatic down-folding side door with the door actuating mechanism completely enclosed for protection against damage during shovel loading. Built for standard 4′8½″ gauge with standard full size MCB couplers. 33″ wheels (Timken Bearing Equipped) on spring suspended axles. Dumped by Easton electric overhead hoist. Capacity 20-25 tons; smaller or larger.

Want bigger production, lower haulage costs? Call freely on Easton engineering service to assist you in the design and construction of your mine and quarry cars, truck bodies and trailers. Write to: Engineering Counsel, Easton Car & Construction Company, Easton, Pa.

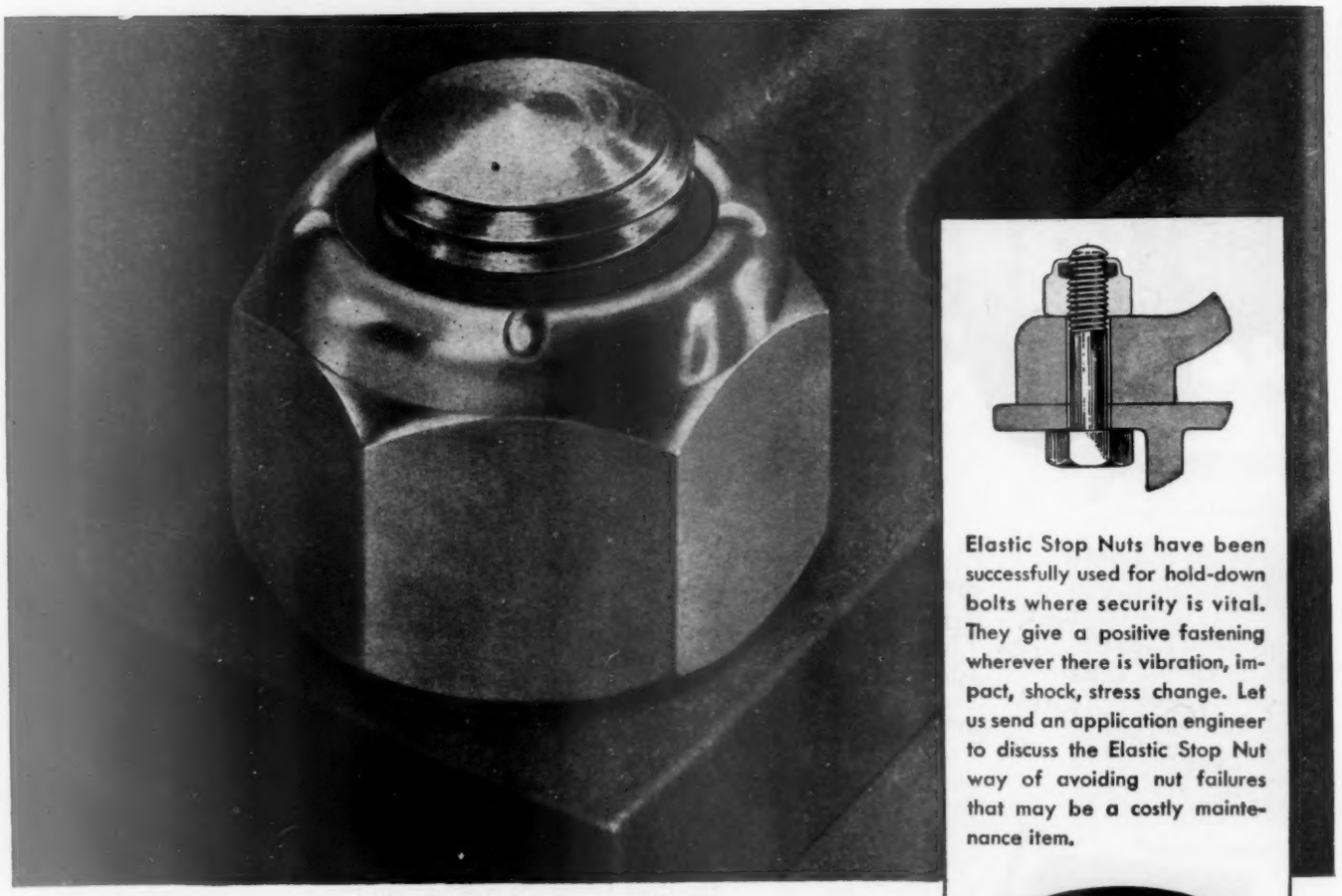
EVERY TON IS AN EASY TON with

EASTON
TRAILERS · TRUCK BODIES
CARS · ELECTRIC TRUCKS
ENGINEERED

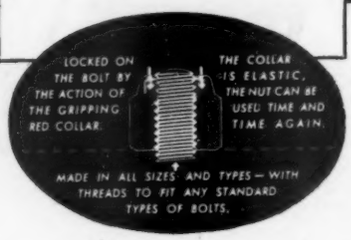
B-1019

PIT AND QUARRY, November, 1945. Vol. 38. No. 5. Published monthly by the Complete Service Publishing Company, 538 South Clark Street, Chicago 5, Ill. Subscription price $2 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $1 additional for each year. Single copies 25 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1897.

A HOLD-DOWN *for Keeps*



Elastic Stop Nuts have been successfully used for hold-down bolts where security is vital. They give a positive fastening wherever there is vibration, impact, shock, stress change. Let us send an application engineer to discuss the Elastic Stop Nut way of avoiding nut failures that may be a costly maintenance item.


LOCKED ON THE BOLT BY THE ACTION OF THE GRIPPING RED COLLAR.
THE COLLAR IS ELASTIC, THE NUT CAN BE USED TIME AND TIME AGAIN.
MADE IN ALL SIZES AND TYPES—WITH THREADS TO FIT ANY STANDARD TYPES OF BOLTS.

This nut uses its head.

An Elastic Stop Nut carries its own insurance for a positive hold-down fastening — the elastic collar built into its head.

Here's how this device works:

The tough but resilient elastic collar forms itself to the individual bolt threads, grips them so tightly that the nut won't loosen up or back off even under the severest vibration.

Forget about cotter pins, lockwashers or any other auxiliaries when you use an Elastic Stop Nut. That means no chance of leaving off these extras as well as saving time in assembly and servicing.

Once on, an Elastic Stop Nut stays on. And it can be used over and over again without losing the grip of its headpiece.

Result: Economy in production and economy in use.

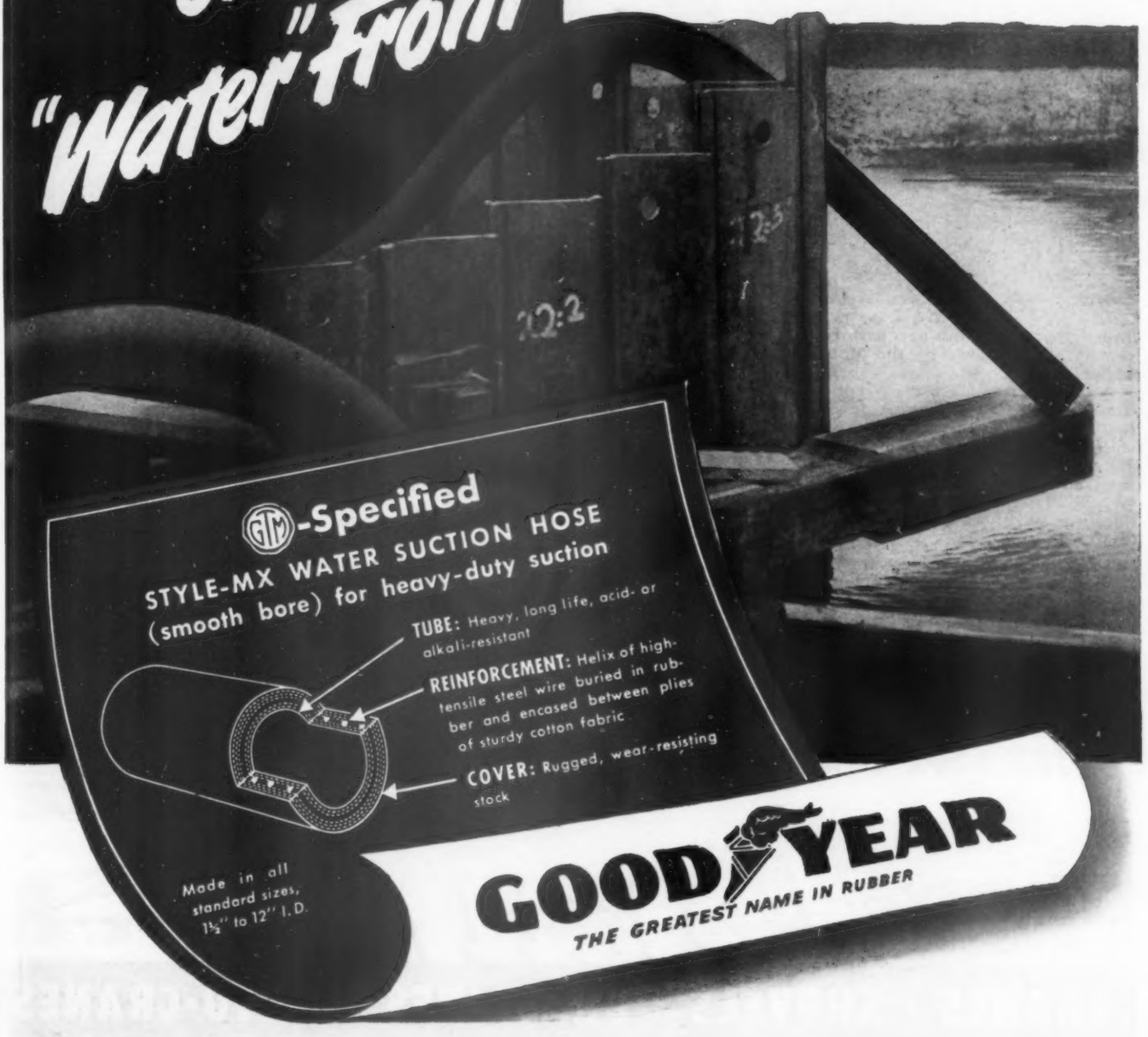
ESNA
TRADE MARK OF
ELASTIC STOP NUT CORPORATION OF AMERICA
Union, New Jersey
and Lincoln, Neb.
Sales Office—1060 Broad St., Newark 2, N.J.

ELASTIC STOP NUTS
Lock fast to make things last

4½ years on the "Water" Front

The hose shown here is a Goodyear Water Suction Hose, put in service 4½ years ago by a large Texas construction company upon recommendation of the G. T. M.—Goodyear Technical Man. It has been used in tough construction, suction and cofferdam work ever since and, as you can see, it is still in good condition — proof of its extra ruggedness and durability. That's just the kind of long-lived, money-saving performance you can expect from all Goodyear Industrial Rubber Products — Hose, Belting, Molded Goods and Packing.

TO ORDER: phone your nearest Goodyear Industrial Rubber Products Distributor — or write the G. T. M., Akron 16, Ohio or Los Angeles 54, California.


GTM-Specified
STYLE-MX WATER SUCTION HOSE
(smooth bore) for heavy-duty suction
TUBE: Heavy, long life, acid- or alkali-resistant
REINFORCEMENT: Helix of high-tensile steel wire buried in rubber and encased between plies of sturdy cotton fabric
COVER: Rugged, wear-resisting stock
Made in all standard sizes, 1½" to 12" I.D.
GOODYEAR
THE GREATEST NAME IN RUBBER

NOW... THE GREAT NEW LORAIN "41" SERIES!

Every one of these four new performers—the Lorain 41 Crawler, the Moto-Crane 414, the Moto-Crane 416, and the Self-Propelled Crane 414—has its own long list of great features. Any one of these machines is good news by itself. But Thew now gives you all of them at once—so you may have the one that's best in mounting, boom equipment, speed and basic efficiency for your job. The two-speed, chain drive crawler, for example, gives you ¾ MPH and 1⅝ MPH. The rubber-tired, single-engined, Self-Propelled Crane offers four speeds to 7 MPH. The two rubber-tired Moto-Cranes—two-engined—four or six wheel drive—give you fastest mobility of all, up to 30 MPH.

Here are just a few things you'll like in the new Lorains! Entire 2-speed chain-drive crawler mounting is wider, longer, heavier with new, positive 4-way ratchet and pawl tread and travel lock.

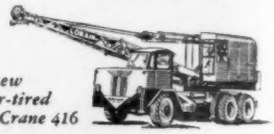
A brand new shoe type swing clutch that gives far smoother action and many times the usual service life. Greatly increased capacities (ask for the new ratings.) ¾-yd. chain crowd shovel. Dual boom stop on all crane booms . . . a double safety feature.

Two piece, all-welded, pin-connected, fast-assembly boom interchangeable for all crane, clam and drag work. All machines convertible to shovel, crane, clamshell, dragline and backhoe work. All available with gas, diesel or electric power.

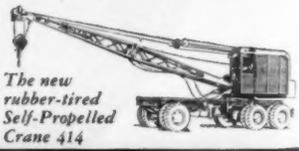
As soon as you see these new Lorains in action, you'll want to put one to work! Check the features and capacities we have room to give you here—then see your nearest Lorain Distributor for the complete facts!

THE THEW SHOVEL COMPANY • LORAIN, OHIO

SEE YOUR LORAIN DISTRIBUTOR NOW!



The new rubber-tired Moto-Crane 416



The new rubber-tired Self-Propelled Crane 414

Reg. Trade Mark

thew-Lorain

CRANES • SHOVELS • DRAGLINES • MOTO-CRANES

...a peek into the future—

Cedarapids Unitized Plant Economy ... for tomorrow's jobs

These 4 Units Make a Dozen Complete Plant Combinations for ANY Job Needs!

Each element of the Cedarapids Unitized Plant is a complete unit in itself, balanced for high capacity used alone or with other matched sizes to handle every range of production volume.

What a Unitized Plant Will Mean to You

The basic economy of standardized machines capable of instant adaptation to special job conditions needs no explanation to operating contractors. Savings begin in lower purchase costs, and extend straight down the line through maintenance, repairs, and labor-saving flexibility to the ultimate goal of profitable contracts. Working machines are the only money-making machines, and the Cedarapids Unitized Plant is designed to give you the equipment flexibility necessary to keep the good contracts coming in, the plant on the job. Be sure you find out all about Cedarapids Unitized Plants BEFORE you buy your plant requirements for the FUTURE—and what a future it is if you have the right portable plant equipment! See your Iowa Distributor for complete details.

IOWA MANUFACTURING COMPANY
CEDAR RAPIDS, IOWA

THE IOWA LINE
of Material Handling Equipment Includes

ROCK AND GRAVEL CRUSHERS
BELT CONVEYORS
STEEL BINS
BUCKET ELEVATORS
VIBRATOR AND REVOLVING SCREENS
STRAIGHT LINE ROCK AND GRAVEL PLANTS
FEEDERS—TRAPS
PORTABLE POWER CONVEYORS
PORTABLE STONE PLANTS
PORTABLE GRAVEL PLANTS
REDUCTION CRUSHERS
BATCH TYPE ASPHALT PLANTS
TRAVELING (ROAD MIX) PLANTS
DRAG SCRAPER TANKS
WASHING PLANTS
TRACTOR-CRUSHER PLANTS
STEEL TRUCKS AND TRAILERS
KUBIT IMPACT BREAKERS

EASES TIME

Check Now with your Socony-Vacuum Representative and learn how really

COMPLETE LUBRICATION SERVICE

saves more time, more ways, in more departments than you imagined possible!

SOCONY-VACUUM OIL COMPANY, INC., and Affiliates:
Magnolia Petroleum Co., General Petroleum Corp. of Calif.

PRESSURE!

To prevent any one of your machines from breaking down and paralyzing the work of dependent machines, war-worn parts *must* have maximum protection. That's why we offer a complete line of quality products which provides exactly the right oil or grease for every application, no matter how unusual!

Regular on-the-job deliveries minimize interruptions for servicing, reduce inventory problems. You save office time, too, now that you can get even the most specialized lubricants from a *single* source. No need for last-minute rush orders, follow-ups.

Your Socony-Vacuum Representative is trained to analyze and solve maintenance and equipment problems . . . to adapt our time-saving maintenance schedules to your special requirements . . . to teach recruits scientifically correct lubrication. He also arranges for engineering aid, when needed.

Socony-Vacuum Contractor's Service goes far beyond mere distribution of fuels and lubricants. It's COMPLETE SERVICE—designed to save time all through your operation!

"ON YOUR STAFF—BUT NOT ON YOUR PAYROLL"—

Your Socony-Vacuum Representative

CORRECT LUBRICATION FOR EVERY PART OF EVERY MACHINE YOU OPERATE . . .
PLUS
1 ENGINEERING HELP on time-losing operating problems; 2 TESTED MAINTENANCE SCHEDULES that minimize service man-hours—keep equipment on the job;
3 PROMPT, DEPENDABLE DELIVERY—a reliable, on-the-job service that eliminates inventory problems for you!

TUNE IN "INFORMATION PLEASE"—MONDAY EVENINGS, 9:30 E. S.T.—NBC

PAGES FROM AN ENGINEER'S NOTEBOOK
AUSTIN-WESTERN
● 2540 Primary Breaker requiring 80-125 H.P., 240 R.P.M., built by Austin-Western Co.

SURE OF BEARING ALIGNMENT

In all crushers—BIG and *little*—there is a certain amount of shaft deflection in operation (even in the oversize shafts used by Austin-Western) and if the bearings are not *self-aligning*, they lose part of their theoretical capacity and cause trouble. So Austin-Western engineers insure performance by using SKF Spherical Roller Bearings. Capable of withstanding extreme conditions of shock load under the severest rock crushing service, these *self-aligning* SKF cannot be pinched by shaft deflection. One of many advantages responsible for the popularity of SKF Bearings among crusher manufacturers. 5905

SKF INDUSTRIES, INC., PHILA. 34, PA.

TOURNAPULL contractor strips 40′ overburden for MARQUETTE CEMENT CO.

General view of Earlham Quarry where Tournapulls load overburden, haul and dump in mined-out pit area in background. Note tough digging and slippery footing . . . loads are still heaped in 100 to 125 feet.

BOOTH & OLSON, Inc. uses 5 Tournapulls to strip tough, wet clay on 500,000 cu. yd. job

6 to 8 feet of silt, 2 to 3 feet blue clay hardpan and 30 feet of slippery, wet yellow clay overburden makes stripping a tough job at the Marquette Cement Company limestone quarry, near Earlham, Iowa. Further, steep 20 to 30% haul road down the face of the limestone bank and long 6% return grade add to production problems. Stripping contractor, Booth & Olson, Inc., of Sioux City, Iowa, found Tournapulls to be the answer on this tough 500,000 cu. yd. job.

Tournapulls Average 9 Trips per hour each on 3000′ Cycle

Working in slick, sticky clay, which tends to ball up, the Tournapulls are pusher loaded in 100 to 125 feet . . . average 9 trips of load, haul, spread and return every hour on 3,000-foot round trip haul. On the dump, LeTourneau positive ejection tailgate wipes the Carryall bowl clean . . . spreads the wet gummy clay in even layers. There are no stuck-in yards hauled back to the cut. Big rubber tires — plus powerful Tournapull 2-wheel design — give ample flotation and traction needed in the cut, on the spoil bank and to negotiate steep, slippery grades.

Tournapulls Drive in from Omaha

3 of these modern Scraper rigs were driven to the job under their own power from Omaha . . . made the 125-mile trip in 9 hours driving time . . . another time and money-saving advantage. Tournapull pit-to-pit moves over public highways with no extra shipping expense or waiting for flat cars or highway trailers, make it practical for stripping a series of pits located some distance apart.

Like Booth and Olson, you'll find that Tournapull s' ability to handle tough materials, their speed and mobility will give lowest-net-cost-per-yard on your stripping operations and for working sand, gravel, or clay pits. Get in touch with your LeTourneau distributor for detailed information TODAY. PQ7

(Below) Tournapulls safely negotiate 20 to 30% grade on haul down to quarry floor.

Positive LeTourneau ejection cleans the Carryall bowl on the dump . . . spreads wet material in even layers.

LETOURNEAU
PEORIA, ILLINOIS · STOCKTON, CALIFORNIA

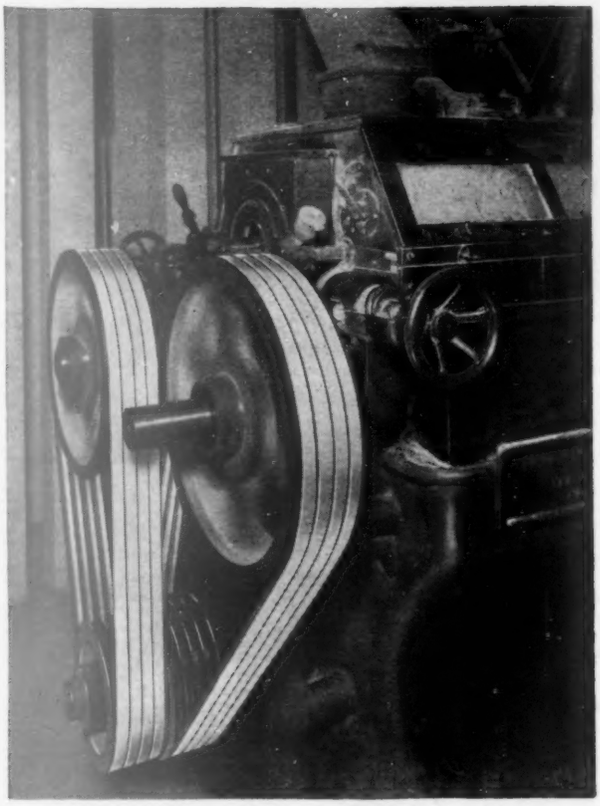
JOB-PROVED
Over 3700 Built and Shipped

TOURNAPULLS

Trade Mark Reg. U.S. Pat. Off.

The reason for this fact is worth knowing

Your **STANDARD** GATES VULCO ROPES are TODAY out-performing **ANY** V-Belts **EVER** Built Before!



All Gates V-Belts are Built with The Patented CONCAVE SIDE

During the war, our Army tanks, tractors and self-propelled big guns required, for *combat* service, V-belts built to performance standards never dreamed of before. Gates developed these greatly superior V-belts through intensified, specialized research — and here is what this NOW means to you:—

Here is the reason

● **Every improvement developed by Gates for these Army V-belts has also been added, day by day, to the quality of the standard Gates Vulco Ropes which have been delivered to you.**

Here is one rare instance in which you have received *immediately* the full advantage of war-time improvements developed primarily for military use. Ordinarily, *you* have to wait. But in the case of Gates V-belts, everyone recognized the vital role they played in maintaining the production that proved so essential in winning the war.

That is why Gates has been able to pass on to you, day by day, every V-belt improvement developed for our armed forces during the war — and that is why your *Standard* Gates Vulco Ropes are today outperforming *any* V-belts ever built before!

Gates

THE MARK OF SPECIALIZED RESEARCH

THE GATES RUBBER COMPANY

Engineering Offices and Jobber Stocks in All Large Industrial Centers

4511

GATES VULCO ROPE DRIVES

CHICAGO 6, ILL., 549 West Washington. NEW YORK CITY 3, 215-219 Fourth Avenue. ATLANTA 3, GA., 521 C. & S. Nat'l Bank Bldg.
LOS ANGELES 21, CAL., 2240 E. Washington Blvd. DENVER 17, COLO., 999 S. Broadway. DETROIT 2, MICH. 223 Boulevard Bldg.
PORTLAND 9, ORE., 333 N.W. 5th Ave. DALLAS 2, TEXAS, 1710 N. Market St. SAN FRANCISCO 3, CAL., 170 Ninth St.

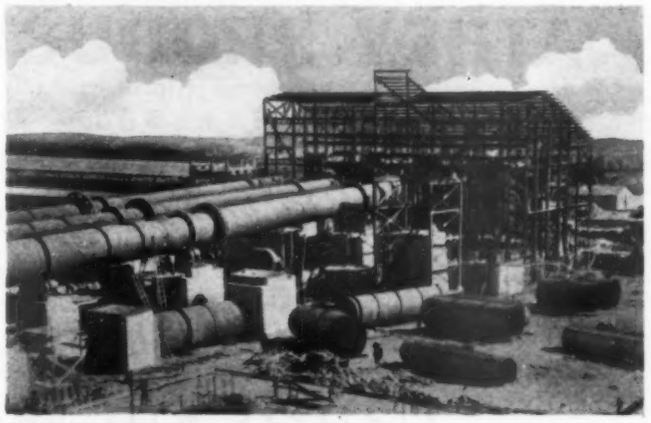
VULCAN KILNS

in South America's Largest Cement Plants

The recent installation of two Vulcan Rotary Kilns—each 8' and 9'-6" in diameter by 199 ft. in length—at Cementos El Melon, Calera, Chile (shown above) has increased the total capacity to 10,000 barrels per day; making it the largest cement plant in South America and one of the largest in the world. Four other Vulcan kilns of the same size and type were also installed recently at another large South American cement plant —Sociedad Cemento Juan Soldado—owned and operated by the same interests, at La Serena, Chile.

To the best of our knowledge and belief more Vulcan Rotary Kilns are operating successfully in modern cement plants throughout the world today than any other kind—undeniable evidence of their correct design and sturdy, dependable, construction.

For nearly half a century Vulcan Rotary Kilns, Calciners, Retorts, Dryers and Coolers have been widely used, also, for the manufacture of high-grade chemical lime, dehydration of bauxite, nodulizing and desulphurizing of ores, alteration of barytes, calcination of lithopone, processing of pigments, recovery of lime from paper-mill sludge, soda ash from black liquor, coke and other by-products from petroleum sludge, etc. As a natural consequence of this long and varied experience our engineers have acquired a vast fund of practical operating data—much of which cannot be duplicated elsewhere and all of which is available for solving the problems of prospective purchasers. Correspondence is cordially invited and constructive suggestions will be furnished, whenever possible, without charge or obligation.



Vulcan Rotary Kilns in process of installation at Sociedad Cemento Juan Soldado, La Serena, Chile.

VULCAN IRON WORKS

Established 1849

Main Office and Works **WILKES-BARRE, PA.,** New York Office 50 Church

Rotary Kilns, Coolers and Dryers	Toothed, Double-Roll Crushers	Heavy-Duty Electric Hoists	Steam Locomotives
Rotary Retorts, Calciners, Etc.	High-Speed Hammer-Type Pulverizers	Self-Contained Electric Hoists	Diesel and Gasoline Locomotives
Improved Vertical Lime Kilns	Ball, Rod and Tube Mills	Scraper-Loading Hoists	Diesel-Electric Locomotives
Automatic Quick-Lime Hydrators	Shaking-Chute and Chain Conveyors	Cast-Steel Sheaves and Gears	Electric Locomotives and Larrys

ANNOUNCING..

a change in name

Effective at once

ATHEY TRUSS WHEEL COMPANY

has adopted the name

ATHEY PRODUCTS CORPORATION

5631 W. 65th ST. CHICAGO 38, ILLINOIS

And its Forged-Trak Wheels, MobiLoaders Force-Feed Loaders and Rubber-Tired Trailers will bear the Trade-Mark

"APCOR"

A Big One For A Big Job

or

A Little One For A Little Job

WE BUILD

Rotary Kilns
Rotary Coolers
Rotary Dryers
Rotary Slakers
Scrubbers
Evaporators
Jaw Crushers
Gyratory Crushers
Reduction Crushers
Crushing Rolls
Grinding Mills
Ball Mills
Rod Mills
Tube Mills
Pug Mills
Wash Mills
Feeders
Rotary Screens
Elevators

•

Whatever your requirements—be they large or small, Traylor engineers can design and build a kiln, cooler or dryer to do the work for you. Into each of these machines are built many ideas, represented by devices to increase efficiency and decrease costs.

These ideas are based on our engineers' intimate knowledge of the work to be done, a knowledge gained by constant study and experience.

Traylor Rotary Kilns, Coolers and Dryers in use in the cement, lime and process industries now total over 45000 feet in length of an average diameter of eight and one-half feet.

Ask our representative to call to discuss these machines with you.

Write for our Bulletin No. 115

TRAYLOR

ENGINEERING & MANUFACTURING CO.

MAIN OFFICE AND WORKS — ALLENTOWN, PENNA., U.S.A.

NEW YORK CITY
3416 Empire State Bldg.

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as pointed out by Multiwall Paper Valve Bags

1 *Freedom from siftage losses.* Multiwalls are made from 2 to 6 plies of tough, specification-made kraft paper. These tight packages eliminate siftage losses. They also cut retention losses and help keep storerooms neat and tidy.

2 *Freedom from dampness losses.* Multiwall Paper Bags are moisture resistant. They protect against damage caused by dampness as well as smoke, dust, and contaminating gases. Multiwalls also offer protection from insect infestation.

3 *Freedom from extra bookkeeping.* Multiwall Paper Valve Bags eliminate the bother of collecting, storing and keeping tabs on returned bags or containers. Multiwalls are single-trip packages . . . once they deliver your product, you have no bother about "returns."

4 *Freedom from bag-cleaning problems.* Because Multiwalls are only used once, food manufacturers have no problems concerning the cleaning or disinfecting of returned bags. New Multiwalls are always spick and span.

IN ADDITION, Multiwall Bag-filling Machines save time, labor and equipment. Let us tell you more about how Multiwalls are serving manufacturers in your industry. There is no obligation, simply write or call your nearest St. Regis office today.

St. Regis MULTIWALL PAPER BAGS

MULTIPLY PROTECTION • MULTIPLY SALEABILITY

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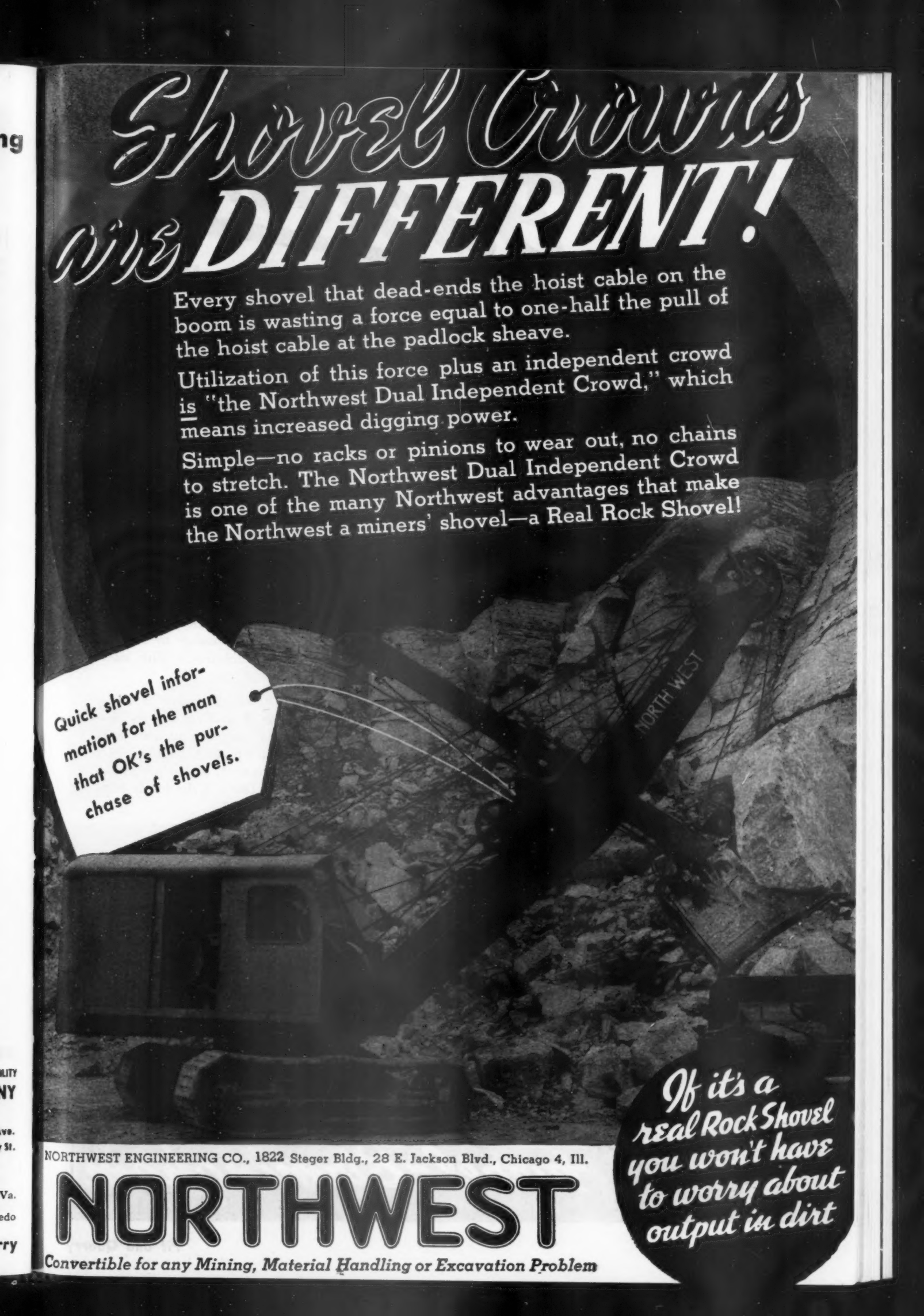
Shovel Crowds are DIFFERENT!

Every shovel that dead-ends the hoist cable on the boom is wasting a force equal to one-half the pull of the hoist cable at the padlock sheave.

Utilization of this force plus an independent crowd is "the Northwest Dual Independent Crowd," which means increased digging power.

Simple—no racks or pinions to wear out, no chains to stretch. The Northwest Dual Independent Crowd is one of the many Northwest advantages that make the Northwest a miners' shovel—a Real Rock Shovel!



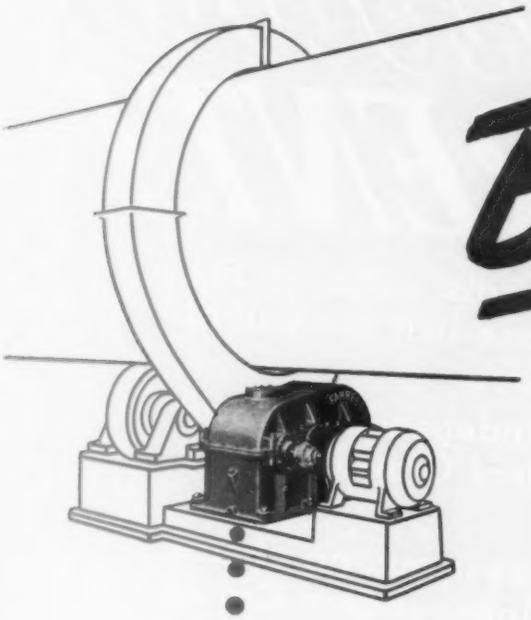
Quick shovel information for the man that OK's the purchase of shovels.

If it's a real Rock Shovel you won't have to worry about output in dirt

NORTHWEST ENGINEERING CO., 1822 Steger Bldg., 28 E. Jackson Blvd., Chicago 4, Ill.

NORTHWEST

Convertible for any Mining, Material Handling or Excavation Problem



Backbone makes this SPEED REDUCER stand out in jobs like these

The gears in Farrel Speed Reducers are the *Gear with a Backbone* type, precision generated by the famous Farrel-Sykes process. The *backbone*—the place where the helices meet to form continuous herringbone teeth, instead of being separated by the center groove necessary in some gears for tool clearance—provides extra strength and capacity to withstand the shocks, stresses and wear encountered in applications like these.

In addition to making use of the entire face width to carry the power load, the combined characteristics of overlap or interlacing of the teeth, gradual engagement and inclined line of pressure distribute the load on the teeth uniformly and contribute to smooth, quiet operation and maintenance of correct tooth action throughout a long gear life.

Shafts ground to close tolerances and rigidly mounted in roller bearings; a lubricating system providing ample oil supply to gears and bearings; and a heavy section housing which maintains accurate alignment of rotating elements are additional factors contributing to smooth, efficient power transmission with minimum maintenance.

Farrel Speed Reducers are available in a complete range of sizes for any application. Ratios of single reduction units range from 1¼:1 to 10:1, double reduction units up to 60:1, and triple reduction units up to 180:1. Write for descriptive catalog No. 438.

FB-241

FARREL-BIRMINGHAM COMPANY, INC.
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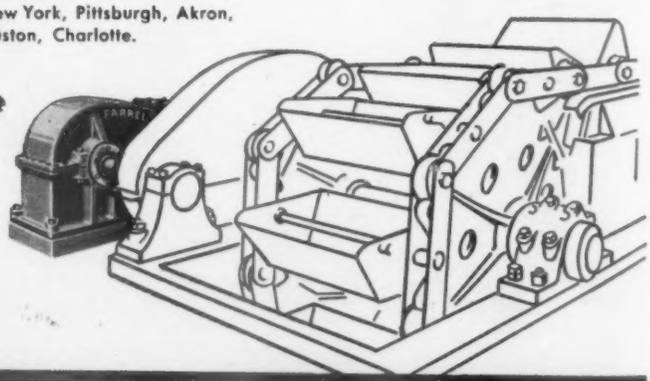
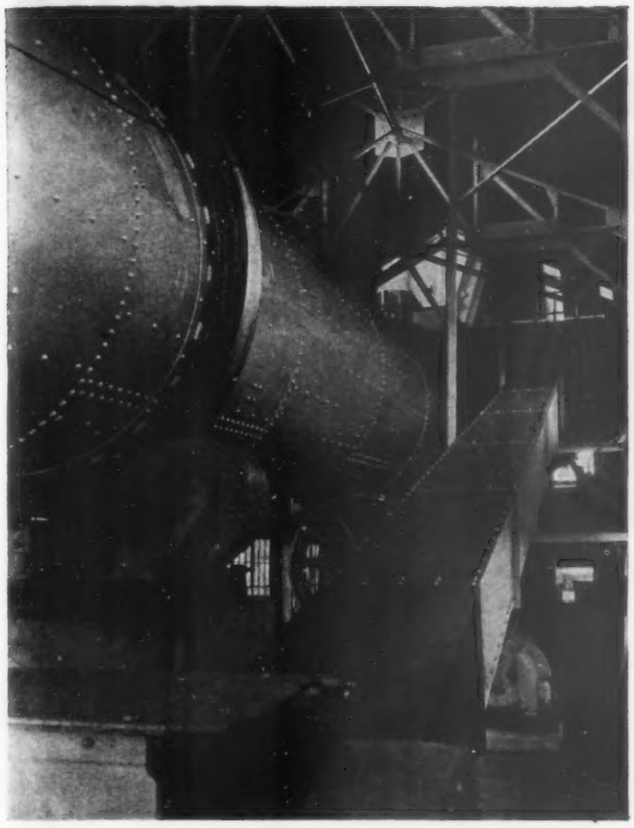
Plants: Ansonia, Derby and Stonington, Conn., Buffalo, N. Y.
Sales Offices: Ansonia, Buffalo, New York, Pittsburgh, Akron, Los Angeles, Tulsa, Houston, Charlotte.

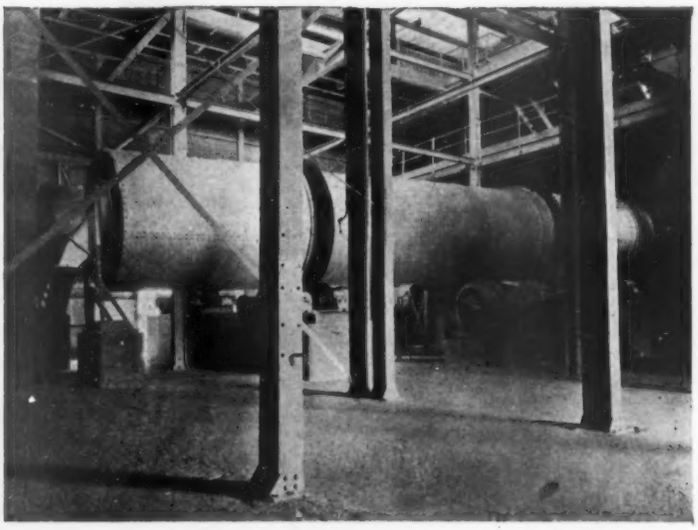


FARREL
The Gear with a Backbone

Farrel-Birmingham



CHRISTIE
Dryer for Materials similar to Rock & Sand



DRYERS

CHRISTIE
Dryer for Paint Pigments & other Light Weight Materials

CALCINERS

Almost half a century of CHRISTIE Experience in the Solution of Drying Problems

For the latest in Drying Equipment— consult us.

Air Absorption Counter Flow Type AC Direct Heat Counter Flow Type DC

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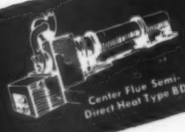
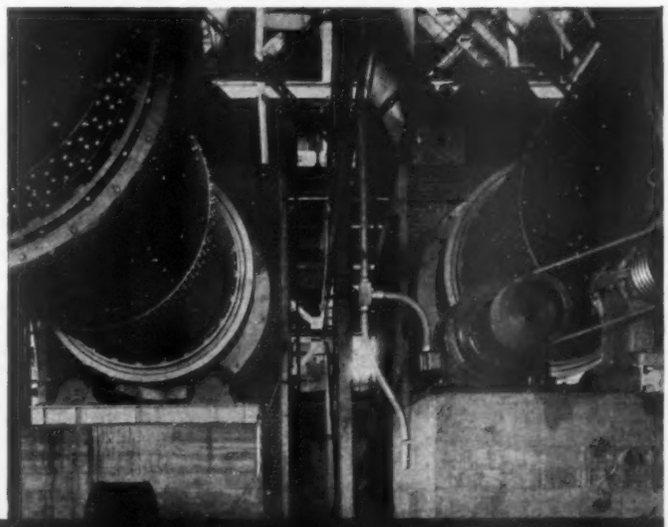


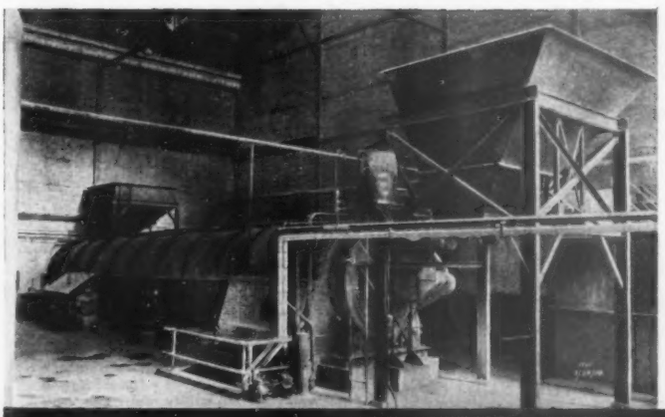
Center Flue Semi-Direct Heat Type BD

COOLERS

CHRISTIE
Coal Dryer. Suitable for other similar Materials

CHRISTIE
Plant for the Drying of Steamed Bone & Materials of that type





The L. R. CHRISTIE CO.

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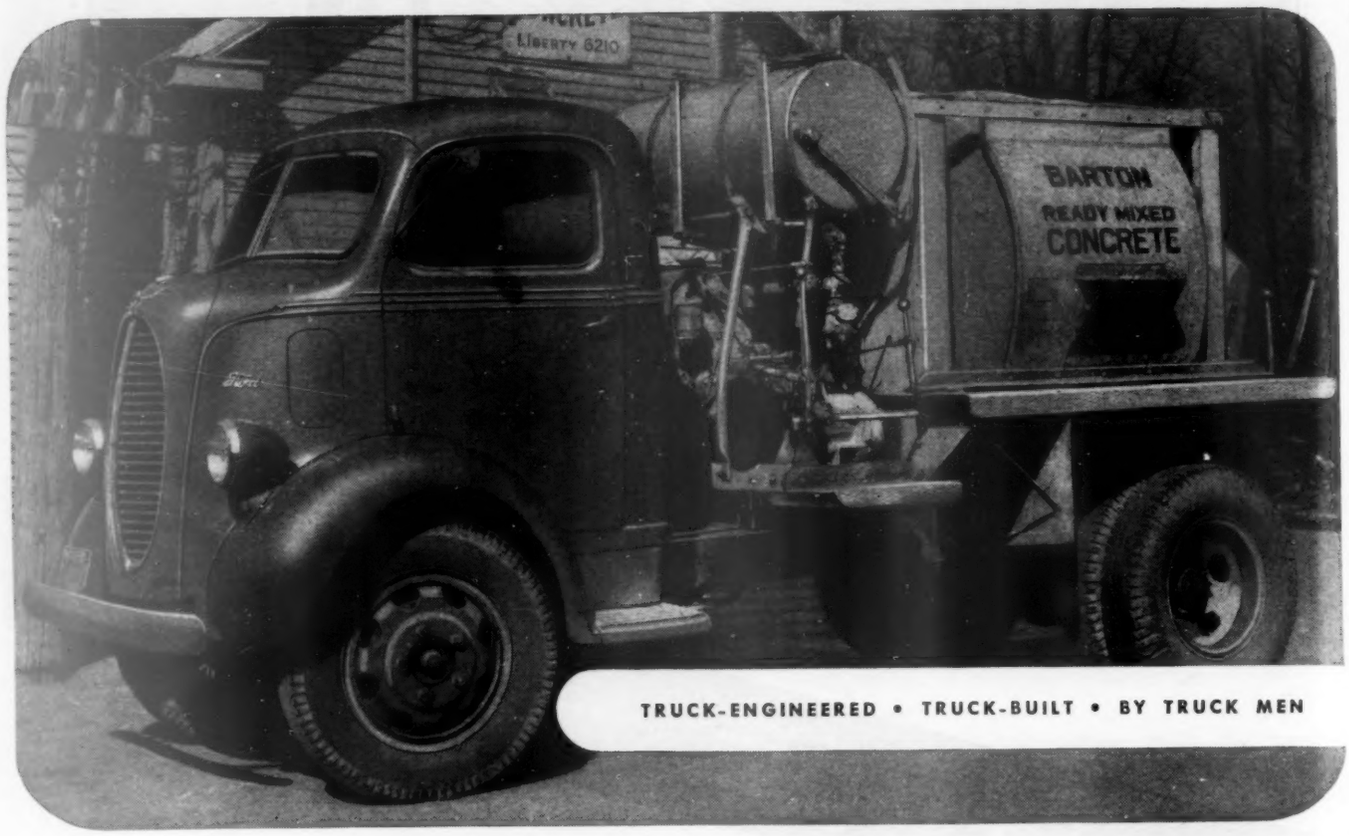
Better Trucks for YOUR Business!



In mixer, tractor, dump service
"Fords mean lower costs, fewer tie-ups"

Because building-materials handling is tougher service than most, it makes the Ford Truck's famous ruggedness and endurance extra-important. And many thousands of men in the sand, gravel and concrete business recognize this. Here's what James P. Barton, general manager of the ALAN E. BARTON Company of Baltimore, wrote about Ford Trucks:

"We operate 20 to 28 mixers, tractors, and dump trucks, 75% of which are heavy-duty Fords. The Ford units have shown lower costs of operation and fewer tie-ups. Through the war, our Ford units have operated under heavy work load and for long hours—always ready to go."

The new Ford Trucks now being built (which include a new dump truck chassis) bring you a great many important engineering advancements. Ask your Ford Truck Dealer to show you these new features, which make the Ford Truck, more than ever, an obvious first-choice for your service.

Ford

ADVANCED ENGINEERING IN NEW FORD TRUCKS

More Economy and Endurance
Easier Servicing

A STILL GREATER 100 HP V-8 ENGINE with NEW Ford steel-cored Silvaloy rod bearings, more enduring than ever in severe service • NEW aluminum alloy cam-ground 4-ring pistons for oil economy • BIGGER, more efficient oil pump and IMPROVED rear bearing oil seal • NEW longer-lived valve springs • NEW improvements in cooling • NEW efficiency in ignition • in carburetion • in lubrication • in ease and economy of servicing operations • And available in all truck chassis except C.O.E. units—the rugged, thrifty 90 HP FORD SIX-CYLINDER ENGINE, with many important advancements.

FORD CHASSIS ADVANTAGES: Easy accessibility for low-cost maintenance • Universal service facilities • Tough, forged front axles • Extra-sturdy rear axles with pinion straddle-mounted on 3 large roller bearings, ¾-floating type in light duty units, full-floating in all others • 3 axle ratios available (2 in 1-ton unit) • 2-speed axle available in heavy duty units at extra cost • Powerful hydraulic brakes, large drums, cast braking surfaces • Rugged 4-speed transmission with NEW internal reverse lock optional at extra cost on light duty units, standard on all others.

FORD TRUCKS

MORE FORD TRUCKS ON THE ROAD • ON MORE JOBS • FOR MORE GOOD REASONS

"I Have Never Seen Breakage Like This!"

That's what Superintendents say everywhere Atlas Rockmasters are tried. The results of this new and different electric blasting device and the Rockmaster system are amazing.

Atlas Rockmasters and the Rockmaster Blasting System . . .

- REDUCE SECONDARY BLASTING—on a particularly tough job secondary blasting was cut from a 6 man 2 shift to a 2 man 2 shift operation. (*A 66⅔% Reduction.*)
- REDUCE BACK BREAK—drillers get more footage in solid rock.
- REDUCE VIBRATION—a 20 hole shot produced less objectionable vibration than an 8 hole shot by old methods.

Atlas Rockmasters and the Rockmaster Blasting System are *NEW - - - DIFFERENT*

ATLAS FIRST

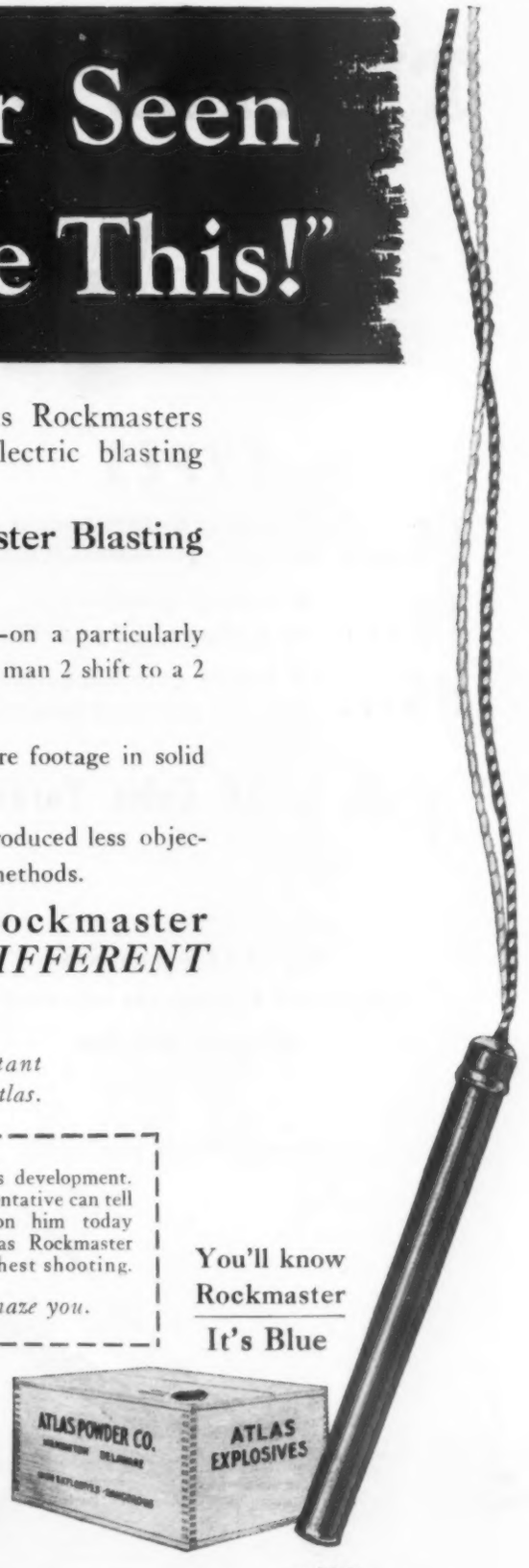
Another in the series of really important blasting developments you expect from Atlas.

A COMPLETE SYSTEM

Such results come from a whole new system of blasting. Electric blasting cap is new—explosives have been geared to the job—methods of selecting, handling, and loading have been redesigned. It's the combination that means money to you.

It's an exclusive Atlas development. Only the Atlas Representative can tell you about it. Call on him today and try the new Atlas Rockmaster system in your toughest shooting.

Results will amaze you.



You'll know Rockmaster
It's Blue

ATLAS ROCKMASTER

ATLAS EXPLOSIVES

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington 99, Del. • Offices in principal cities • Cable Address—Atpowco

THERE'S A HENDRIX FOR EVERY JOB!

TYPES

LS... A lighter weight bucket designed for levee and drainage work.

TS... A medium weight bucket, classified as a general purpose bucket.

HS... A heavy duty bucket for moving shale or any hard formation.

3/8 to 30 Cubic Yards

10% to 14% manganese
Chains and Fittings are standard on all types and sizes

Write for literature or ask your dealer.

HENDRIX *Lightweight* **DRAGLINE BUCKETS**

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YOU NAME IT...HE'LL GET IT...

Your Industrial Supply Specialist

He's the quartermaster for industrial America. The equipment, tools, supplies and materials he handles require him to be a true specialist in every sense. He knows how those products fit your needs . . . he can tell you where and how they can help you save time and money. He is in business to serve you, and is available night and day to help you eliminate costly shut-downs, repairs, and production "bottlenecks."

We are proud that Hewitt rubber products for industry come to you through men like these. Next time you call your Industrial Supply Specialist ask him how Hewitt "Job-Engineered" industrial hose, belts and molded goods can solve your problems more efficiently . . . at lower cost. He's as close as your phone, and, in your community, you'll find the best Industrial Supply Specialist listed in your telephone directory under HEWITT. Why not call him *now?*

Specify "Hewitt" for quality industrial rubber products. Phone the Hewitt distributor listed in the Classified Section of your telephone directory, or write to Hewitt Rubber Corporation, 240 Kensington Avenue, Buffalo 5, New York.

HEWITT RUBBER *of Buffalo*

Job-Engineered Industrial Hose • Belts • Molded Goods

QUALITY RUBBER PRODUCTS FOR INDUSTRY FOR 85 YEARS

Plan NOW to TRAXCAVATE!

IT'S THE MODERN DIRT AND MATERIAL HANDLING METHOD

Model T-4 loading gravel from stockpiles, Albany, New York

One of two T-4 TRAXCAVATORS loading trucks at Pickens Quarries, Oklahoma

Loading limestone in underground quarry, Hershey, Penn.

Your plans to reduce production costs will get off to a flying start if you decide to TRAXCAVATE, for it's the modern material handling method that has enabled many other pits and plants to cut costs. TRAXCAVATORS, the dependable tractor excavators, combine in one machine the usefulness of many — will strip overburden, load from pit or stockpiles, carry and stockpile, maintain haulage roads, remove snow, do drawbar work. There's a wide choice of models with bucket sizes from ½ to 2½ cubic yards. Your TRACKSON-"Caterpillar" dealer will be glad to give you the complete facts, or write to TRACKSON COMPANY, Dept. PQ-115, Milwaukee 1, Wisconsin.

SIX do it at SOO

OWNER Howard MacDonald has the right formula for keeping things humming at the Soo Gravel Co. near Sault Sainte Marie, Michigan. He must turn out mountains of aggregate in a hurry, so he relies exclusively on "Caterpillar" Diesel power—*six units* that run crusher, conveyors, dragline and tractor.

The engines vary in size, but there is no variation in results, economy or owner satisfaction.

That's one major reason why more and more owners of crushing and washing plants are standardizing on "Caterpillar" Diesel power. It is available not only in tractors, power units and electric sets, but also in leading excavators, crushing plants, compressors and locomotives. It is real workpower* — designed and built for hard jobs and thoroughly protected from dust, grit and moisture. It is economical to operate, easy to maintain, free from all delicate field adjustments, with proved long life under the severest quarry conditions.

This, plus one unrivaled source of dealers' parts and mechanical service, makes "Caterpillar" Diesel an outstanding power value for your job. Why not standardize on it for all your future purchases?

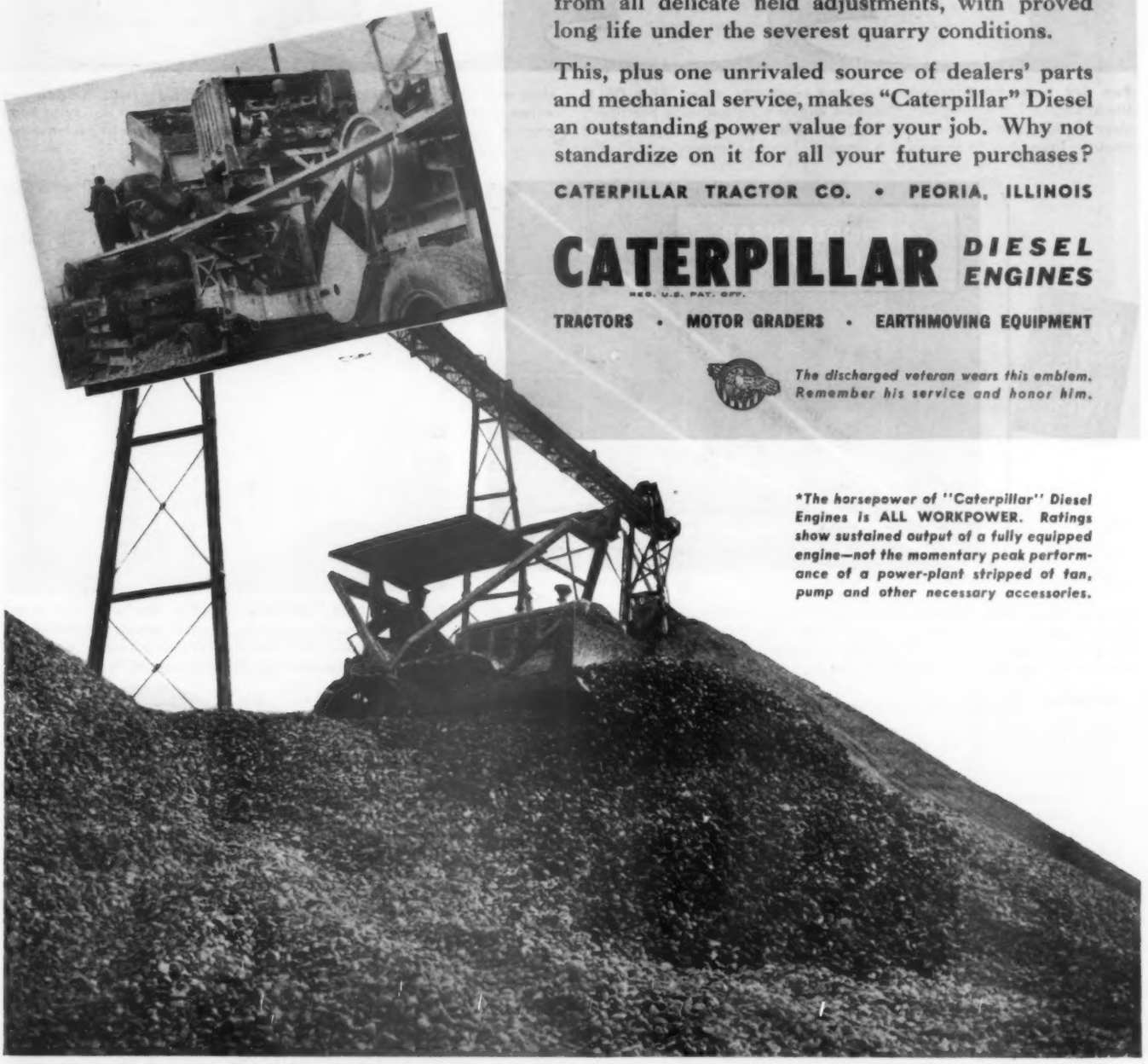
CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

CATERPILLAR *DIESEL ENGINES*

REG. U.S. PAT. OFF.

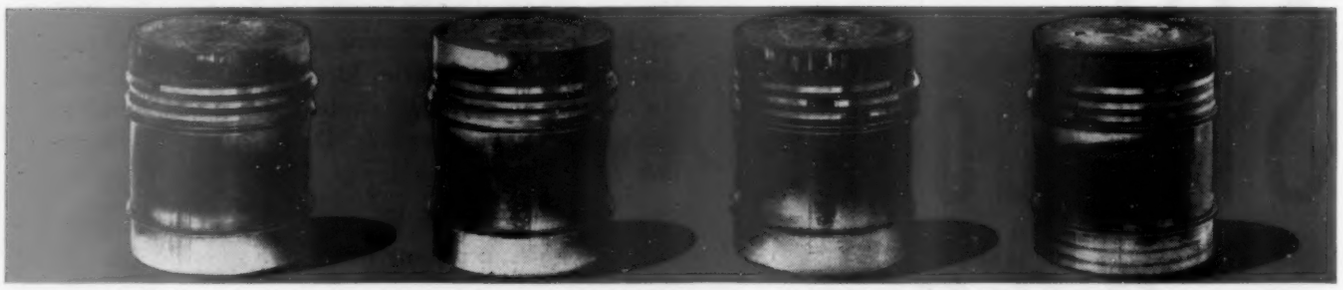
TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

The discharged veteran wears this emblem. Remember his service and honor him.

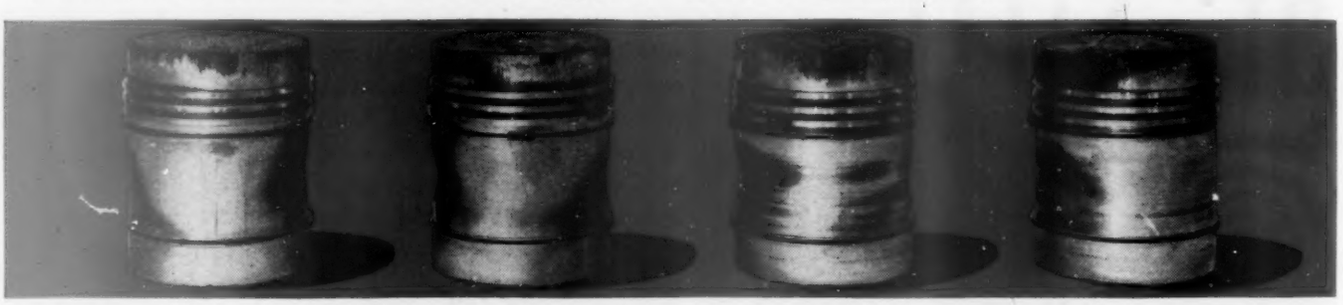


**The horsepower of "Caterpillar" Diesel Engines is ALL WORKPOWER. Ratings show sustained output of a fully equipped engine—not the momentary peak performance of a power-plant stripped of fan, pump and other necessary accessories.*

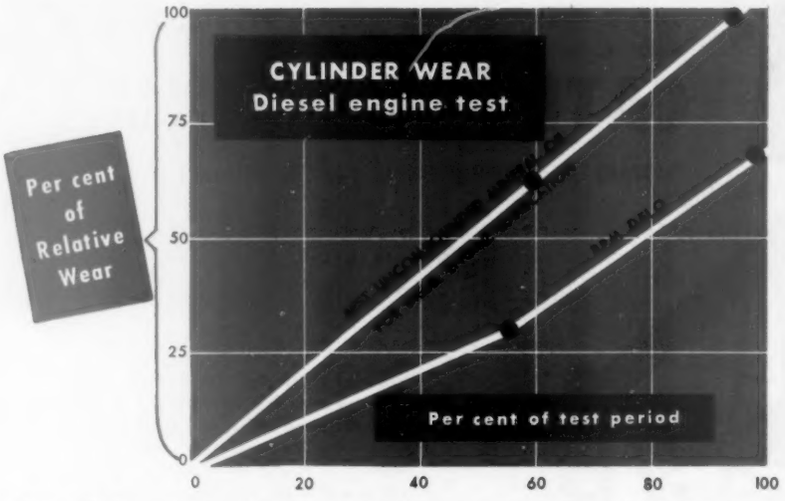
How RPM DELO Oil keeps Diesel pistons clean



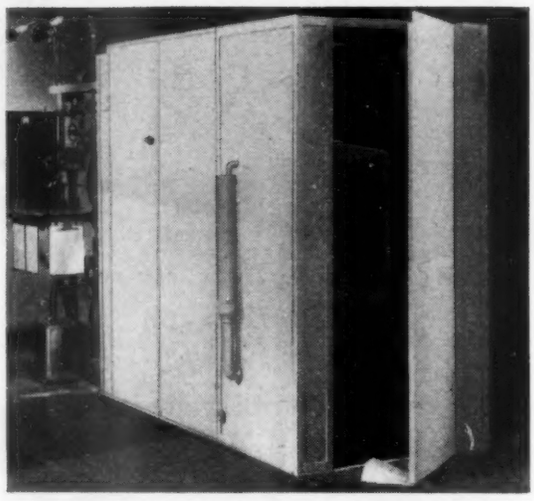
After only 265 hours of operation using the best *uncompounded mineral oil*, these Diesel test engine pistons were coated with a heavy, sticky gum-carbon deposit, as shown in this actual photo. The few bright areas were kept clean by rubbing cylinder walls. Oil ring slots were clogged, and blowby, resulting from stuck rings, caused a deposit of gum to form on cylinder liners. The engine was run on 80% load in a "Hot Box" where the air to the radiator was maintained at 125° F., simulating severe summer operation in high temperature areas.



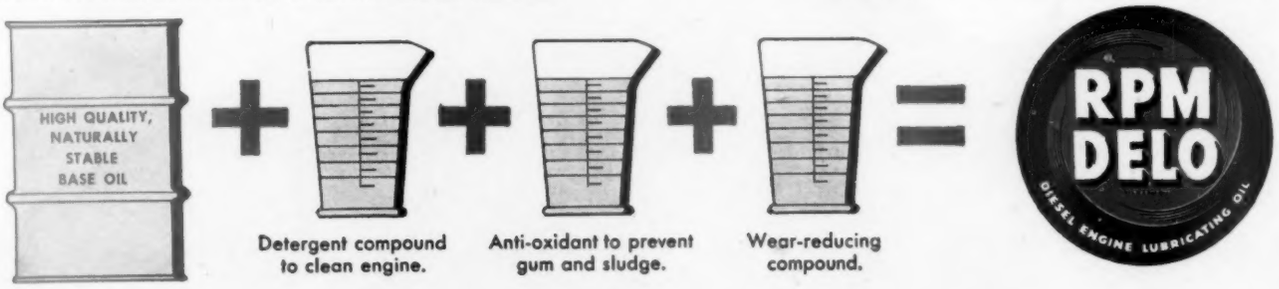
Run five times longer under the same conditions, using RPM DELO Diesel Engine Lubricating Oil, the same engine's pistons were practically clean, as this photo shows. After 1200 hours, all the rings were free and unstuck. There was no appreciable amount of carbon formation in oil ring slots and the ring grooves were free from carbon deposits. Special, patented compounds in RPM DELO Oil give it this unusual ability to keep engines clean. They resist the formation of gum and varnish, remove deposits and keep contaminants in suspension.



How cylinder wear is reduced by minimizing gum-carbon and varnish formation on Diesel engine pistons through the use of RPM DELO Oil is shown by the above chart. For other charts, tests and a complete technical report on RPM DELO Oil, write for Booklet T-7, Standard of California, San Francisco 20, California.



This "Hot Box" cabinet is used in the laboratory to test Diesel lubricants in engines. It is the one mentioned above. In many devices, RPM DELO Oil is checked under conditions far more severe than are likely to be met in the field.



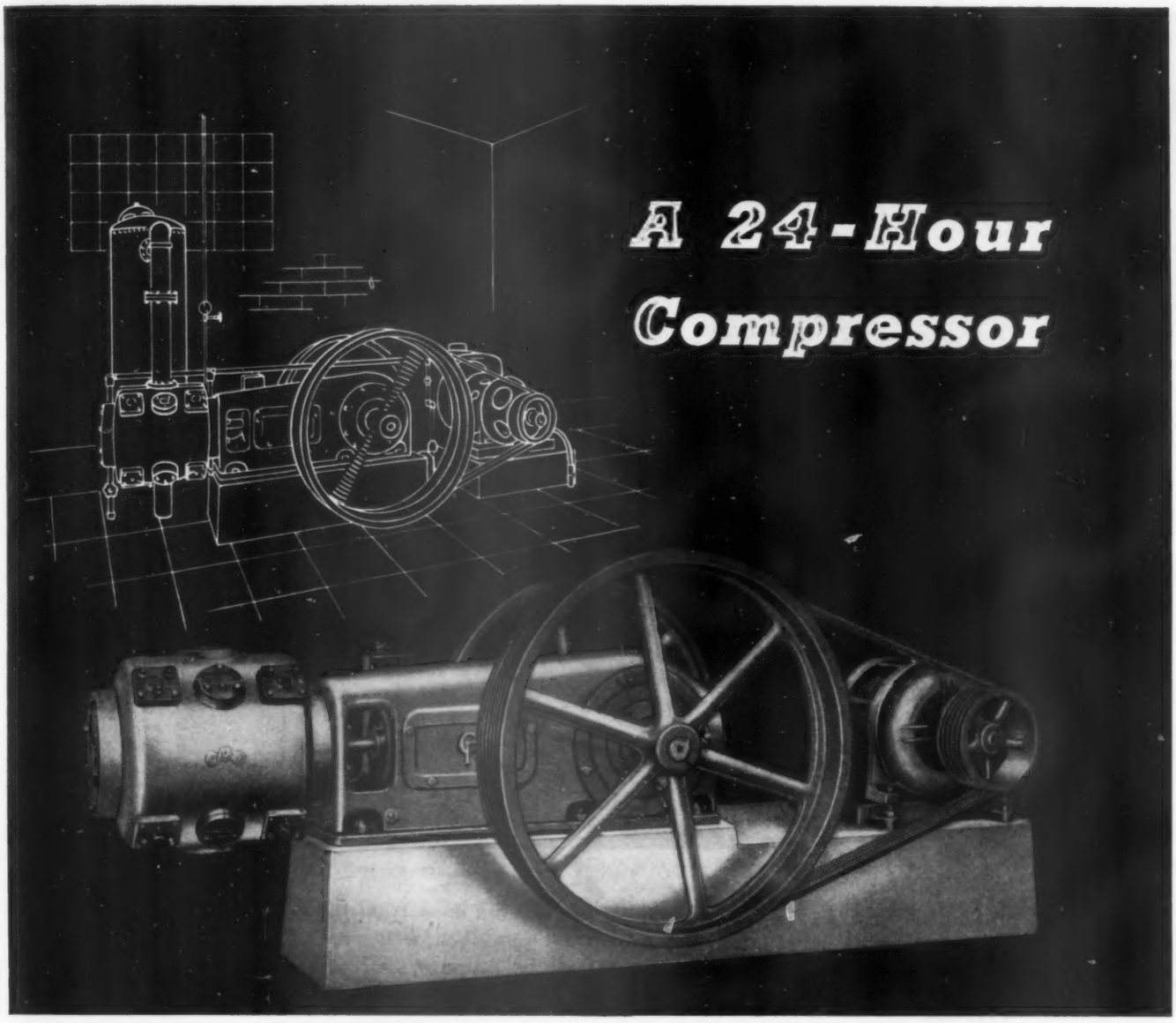
Detergent compound to clean engine.

Anti-oxidant to prevent gum and sludge.

Wear-reducing compound.

STANDARD OF CALIFORNIA

RPM DELO Oil has world-wide distribution under the names: RPM DELO, Caltex RPM DELO, Signal RPM DELO, Imperial RPM DELO (CONCENTRATE)



with high efficiency... low maintenance

THE CP Type T Compressor is a "wheel horse" for economical, continuous performance...keeps working away, year after year, with minimum maintenance. It is of the horizontal, single-stage, double-acting, water-cooled type, arranged for belt, direct-connected motor or steam drive. Simplate valves, liberal water jackets, one-piece trouble-free crosshead, double-row tapered roller main bearings are a few of the features responsible for its superior performance. Type T Compressors are available in sizes from 15 to 125 hp, in single-stage design for pressures up to 150 pounds, and in multi-stage units for pressures up to 5,000 pounds. Write for Bulletin 728.

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AIR COMPRESSORS
VACUUM PUMPS
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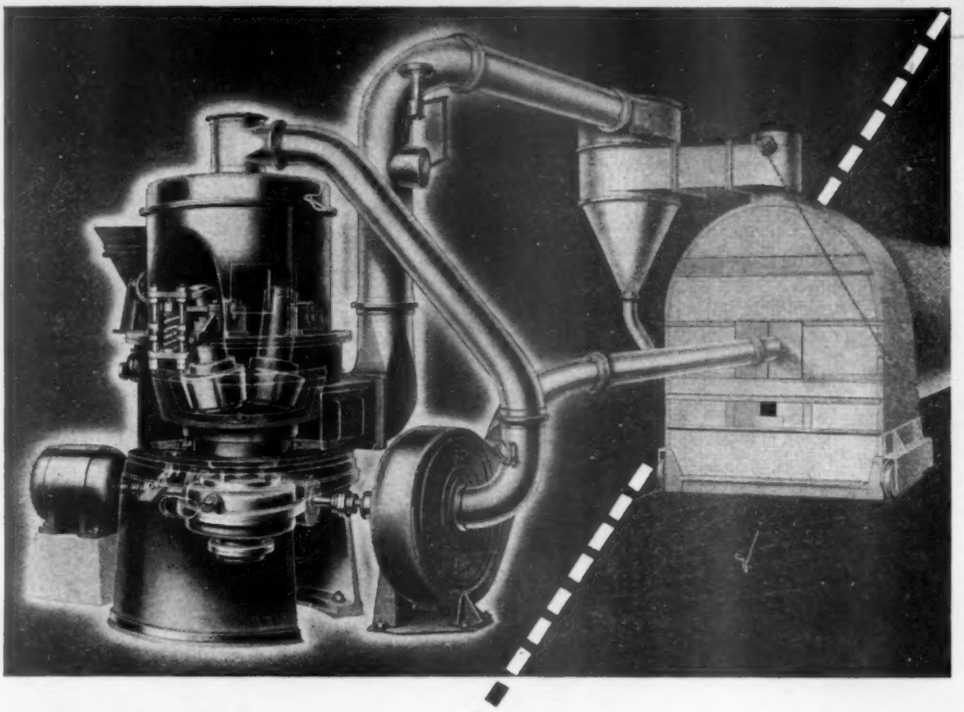


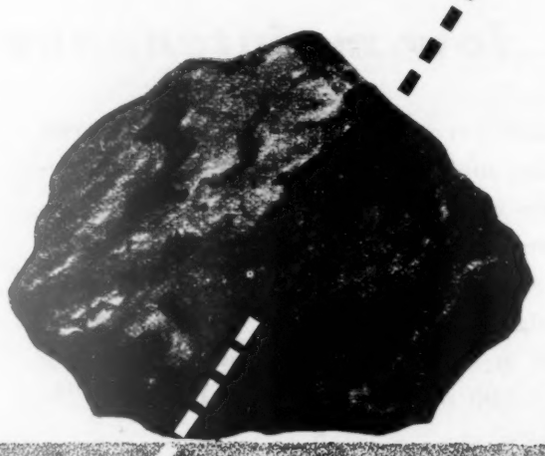
BOWL MILL

RAYMOND BOWL MILL

"Get the most from the coal with the Bowl Mill" . . . today's direct-firing unit that is proving its right to replace fuel oil, natural gas and centralized powdered coal systems on account of its extra operating economies, which pay for the installation in a short period of time.

1. Uniform pulverization . . . at light or heavy load . . . on any grade or moisture coal.
2. Proper drying of the coal in-the-mill while grinding . . . automatic rejection of foreign materials.
3. Panel board control, which permits one operator to tend several mills. Lubrication and adjustments while running.
4. Quiet, vibrationless, dustless operation . . . month after month without shut-downs.

To maintain peak production, use the Bowl Mill for direct-firing cement, lime, dolomite kilns and industrial furnaces.



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COMBUSTION ENGINEERING COMPANY, INC.
1321 North Branch St. Chicago 22, Illinois
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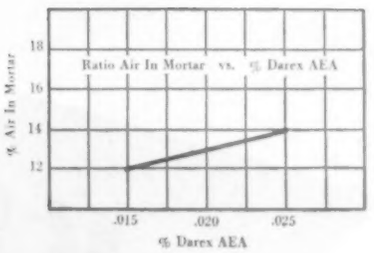
in KILN FIRING

SIMPLIFY THE MANUFACTURE OF AIR-ENTRAINING CEMENTS WITH *Darex* AEA

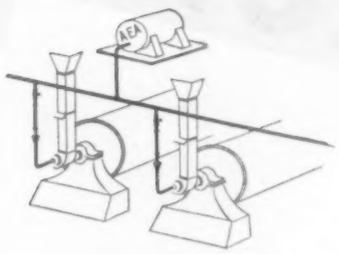
Darex AEA is a new air-entraining agent that has been thoroughly tested both in the laboratory and in the field. Darex AEA is permitted by A.S.T.M. for C 175-44T.

Darex AEA is a development of over five years' research in our laboratories, backed by our fifteen years of field work with cement manufacturers in the use of TDA. Already over twenty mill runs and over a million barrels of air-entraining cement have been made with Darex AEA.



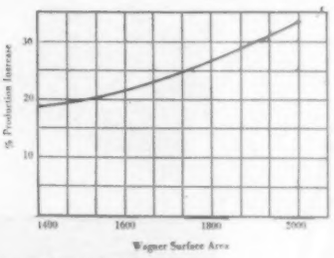
COMES READY TO USE AS RECEIVED

Darex AEA is a water-soluble compound that comes in convenient drums or tank-cars, ready to use as received. It is easy to use and absolutely safe—no mixing—no harsh chemicals—no extra safety precautions.



DAREX AEA IS A POWERFUL GRINDING AID

Based on our experience with TDA, the new Darex AEA is a powerful grinding aid which increases production and maintains a relatively uniform surface area in the cement being ground, giving uniform mill control.



DAREX AEA IS ECONOMICAL

Mill operators find Darex AEA inexpensive to use. Under average operating conditions, the increased mill production more than offsets any out-of-pocket cost of Darex AEA. Due to the catalyst in Darex AEA, it is not necessary to grind to a greater fineness to obtain strengths comparable to those of untreated cements.

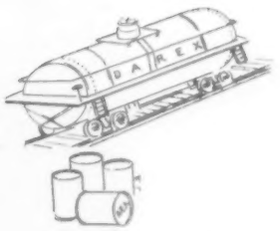
IT IS NOT SUPER-SENSITIVE

Darex AEA is not super-sensitive, as small variations in the amount used are not critical and do not greatly affect the air entrained.

Mill superintendents know that fluctuations in the feed of the clinker require an air-entraining agent added in a constant flow to have sufficient latitude so that it will not produce cements incorporating varying amounts of air. Repeated mill runs have shown that even under adverse conditions Darex AEA is not super-sensitive and gives controlled air in cement mortars.

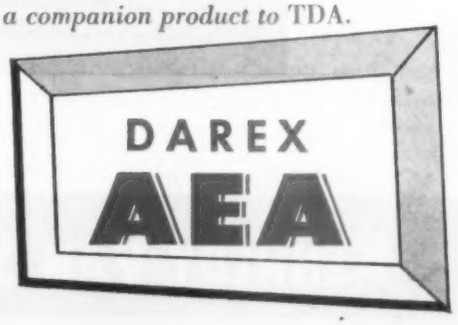
READILY AVAILABLE

Shipped in convenient containers from 55-gallon drums to tank-cars, F.O.B. Chicago, Illinois. Ready to use.



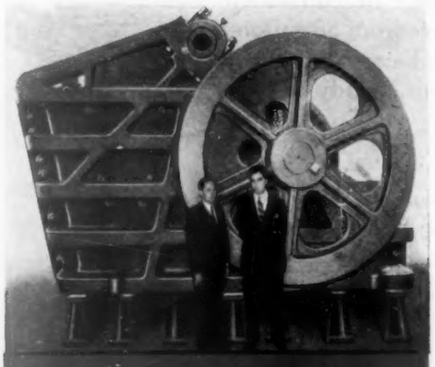
From our experience to date, Darex AEA when added to the finish mill grind gives cements that incorporate uniform amounts of air. It is easy and safe to use. It has been declared acceptable by A.S.T.M. for cement specification C 175-44T. We don't claim that it is a cure-all, but believe it is worth your investigation. Why not make a mill grind and see for yourself what Darex AEA can do with your cement?

Darex AEA — *a companion product to* TDA.

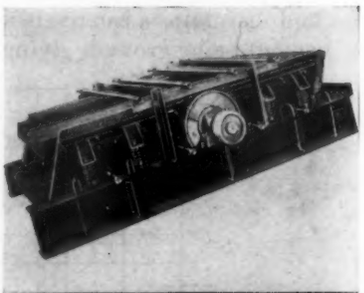


DEWEY AND ALMY CHEMICAL COMPANY
CAMBRIDGE 40, MASSACHUSETTS

FAIR WEATHER AHEAD



KVS extra heavy duty Swing Jaw Crusher. Available in sizes for all feed and capacity requirements.



KVS Vibrating Screen, featuring low installation and maintenance costs, with sizing efficiency up to 95%.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

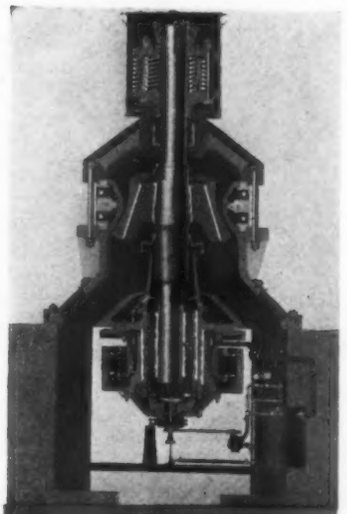
For PIT, MINE and QUARRY OPERATORS and CEMENT PLANTS

A Complete Line of Equipment for Crushing, Pulverizing, Washing, Screening and Conveying Materials

• • •

Complete Cement Plants furnished

KVS Gyratory Gearless Short Shaft Standard Crusher for primary reduction. Synchronous motor built in pulley for super-efficiency.



KVS low head type Gearless Crusher for fine reduction. Extremely durable. Easily accessible. Quick adjustment of crusher opening.

The signs of the times point to increasing demands for non-metallic minerals, for a large peace-time output to meet industrial and residential requirements.

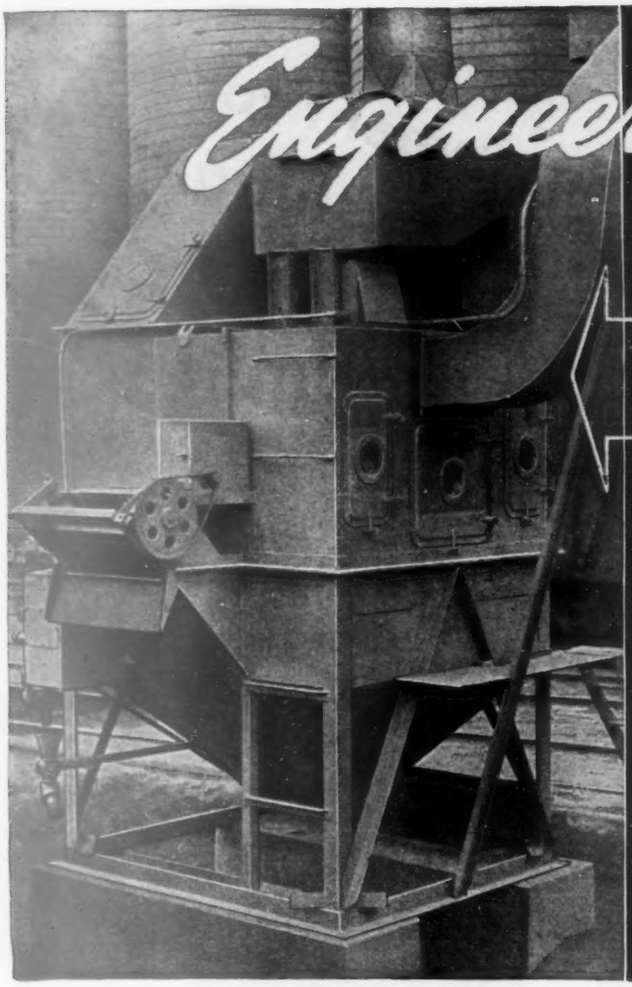
Leading producers in this field also consider it a good point to rely upon KENNEDY-VAN SAUN machines for processing and handling their product from start to finish.

KVS units have established their wide reputation for economy, durability and capacity through many years of service under the most exacting conditions.

ARMY E NAVY

Write for Bulletins

2 PARK AVENUE • NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.



Engineered TO ROCK PRODUCTS DUST CONTROL REQUIREMENTS

TYPE N ROTO-CLONE INSTALLATION AT THE FUNKHOUSER COMPANY

This Roto-Clone exhausts 7000 cfm from a drier removing a heavy concentration of fine slate dust. This dust load with the combustion gases from the drier is handled with constant exhaust volume and high dust removing efficiency assuring cleanliness and an improved product. The Funkhouser Company is a prominent supplier of colored slate surfacing materials for roofings.

Important among several entirely new types of dust control equipment developed by AAF engineers is the Type N Roto-Clone.* Originally designed for the handling of hazardous magnesium dust in aircraft engine plants, this new wet dust collector has turned out to be unusually valuable to the rock products industry for the collection of certain types of rock dusts.

After being collected and wetted, the collected dust is disposed of in the form of sludge. In addition to the Type N Roto-Clone, the Type W, also a wet type precipitator, and the Type D, dry type precipitator, are in wide use throughout the industry. In fact, there is a Roto-Clone available to meet every requirement of the rock products field. Write for descriptive bulletins.

*Registered Trade-Mark for a Dynamic Precipitator or Hydrostatic Baffle-Type Wet Collector.

ANOTHER AAF PRODUCT

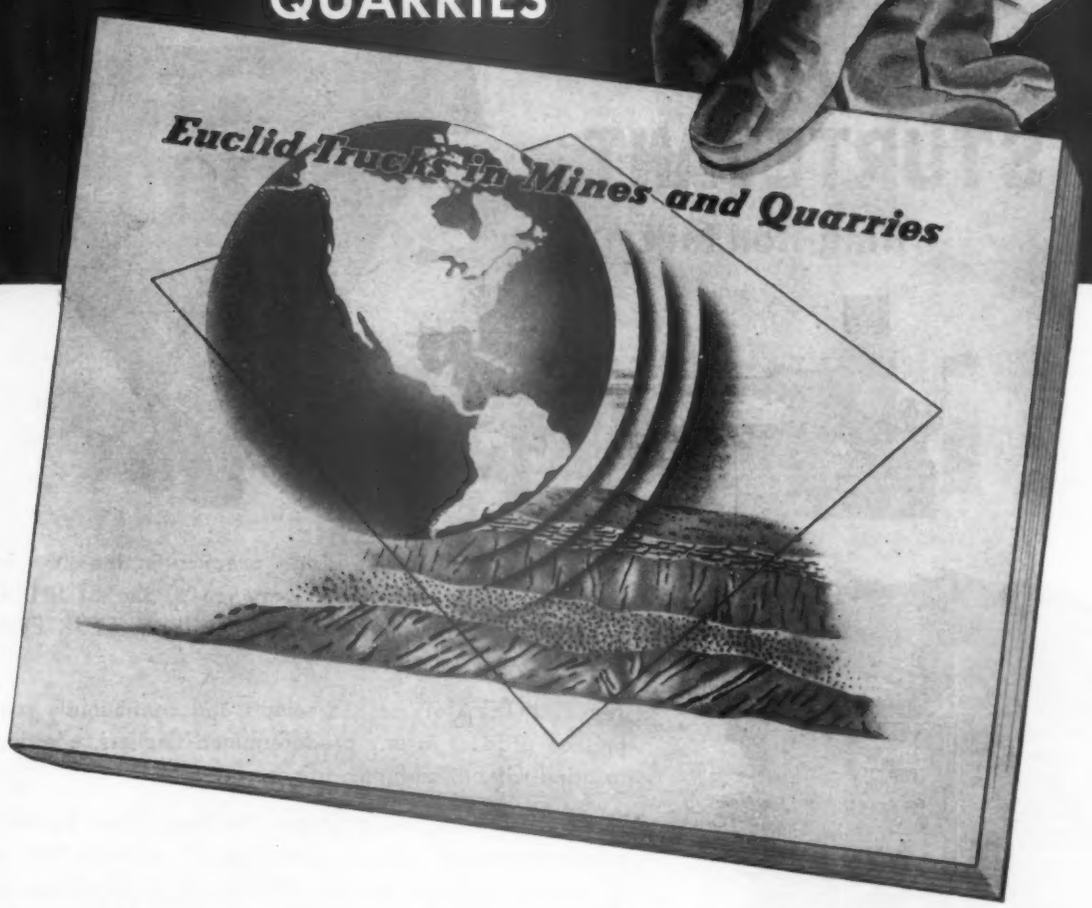
AMERICAN AIR FILTER COMPANY, Inc.
INCORPORATED
192 Central Avenue — Louisville, Kentucky
In Canada: Darling Bros., Ltd., Montreal, P. Q.

ROTO-CLONE
FOR ROCK PRODUCT DUST CONTROL

HERE'S AN INTERESTING BOOK ON

TRUCK HAULAGE

IN MINES AND QUARRIES



● For facts and figures on typical applications of Rear-Dump and Bottom-Dump EUCLIDS in mines and quarries, get your copy of this 32-page book. Profusely illustrated with full color and black and white on-the-job pictures, it shows how leading operators are using Euclids for overburden, ore and stone haulage on many kinds of open pit operations.

You will find this book of special interest because of the information and variety of jobs illustrated. It may be helpful in suggesting ways to increase production and lower *your* hauling costs. There is no obligation, of course, so ask your Euclid distributor or representative for your copy, or write us direct . . . on your letterhead, please.

The EUCLID ROAD MACHINERY Co. · · · Cleveland 17, Ohio

EUCLID SELF-POWERED HAULING EQUIPMENT For EARTH . ROCK . COAL . . ORE

The Winning Combination

for top profits in Lime Plants

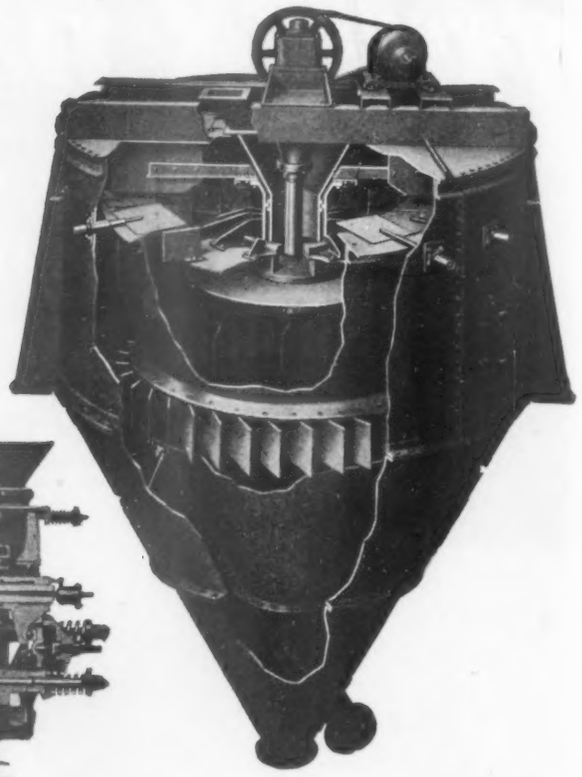
STURTEVANT

AIR SEPARATOR

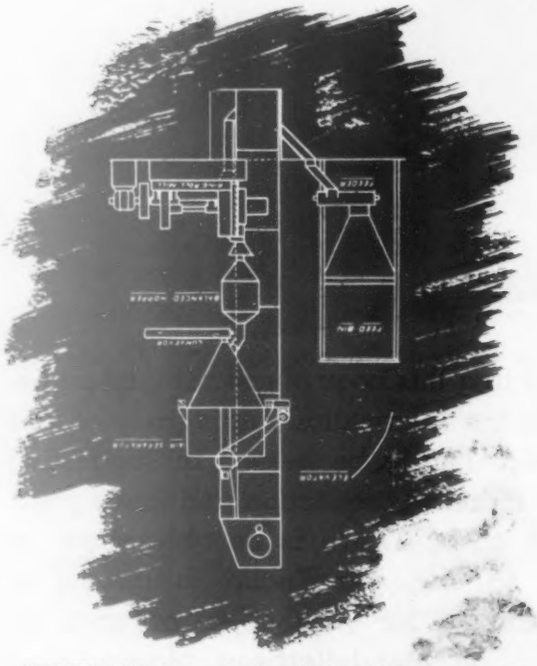
plus

STURTEVANT

Ring-Roll Mill



Recommended for medium and fine reduction of hard or soft materials. Extremely durable. Open door accessibility. Low power requirements. Wide range of sizes.



STURTEVANT Integral Closed Circuit System insures maximum tonnages of accurately sized limestone or similar materials.

Modern pulverizing and sizing practice in the lime industry is based upon the proven performance of the STURTEVANT Air Separator operating in closed circuit with the STURTEVANT Ring-Roll Mill.

The STURTEVANT method selects and continuously removes the finished product in any predetermined fineness, allowing the mill to grind without cushioning fines.

The STURTEVANT Centrifugal Air Separation System involves counterbalancing and counteracting air currents that permit of an accurately sized material, with the rejection of coarser sizes.

STURTEVANT installations increase capacity up to 300% . . . reduce power needs from 10% to 50% . . . show record economy in maintenance costs . . . insure a uniform, high quality product.

STURTEVANT Air Separators are rigidly and compactly built for many years of trouble-free service. Available with diameters from 3 feet to 18 feet, in capacities from 1/4 ton to 50 tons, classifying range of 40 mesh to 350 mesh.

Write for Bulletins describing the STURTEVANT line of material processing equipment.

BUY WAR BONDS

STURTEVANT MILL CO. HARRISON SQUARE BOSTON 22, MASS.

POWER IN ACTION!

This International TD-6 Diesel, equipped with a dozer shovel, is a portrait of *power in action*—where the going is rough.

The tough jobs, the grueling day-in and day-out grinds—these are the jobs where you'll find Internationals. These are the jobs that have proven International stamina and endurance.

International Diesel TracTracTors are engineered for this kind of work. They're better balanced for maximum traction under all conditions. They're powered by mighty Diesels that are always ready to deliver at a moment's notice and carry on until the job is done. Ease of control and a selective range of practical working speeds plus full Diesel economy get the work done at the lowest cost. All these features are responsible for the ever-increasing popularity of International TracTracTors.

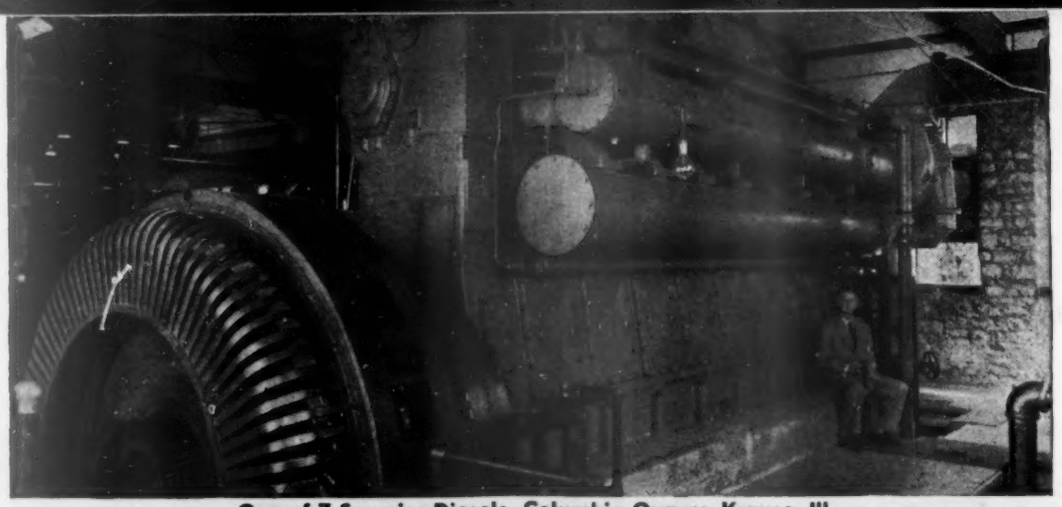
See these powerful crawlers at your International Industrial Power distributor's today. Let him give you the whole story about International Crawlers—dynamic and durable power.

INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago 1, Illinois

INTERNATIONAL Industrial Power

Superior DIESELS

. . . . will give you
consistent power profit



One of 7 Superior Diesels, Columbia Quarry, Krause, Ill.

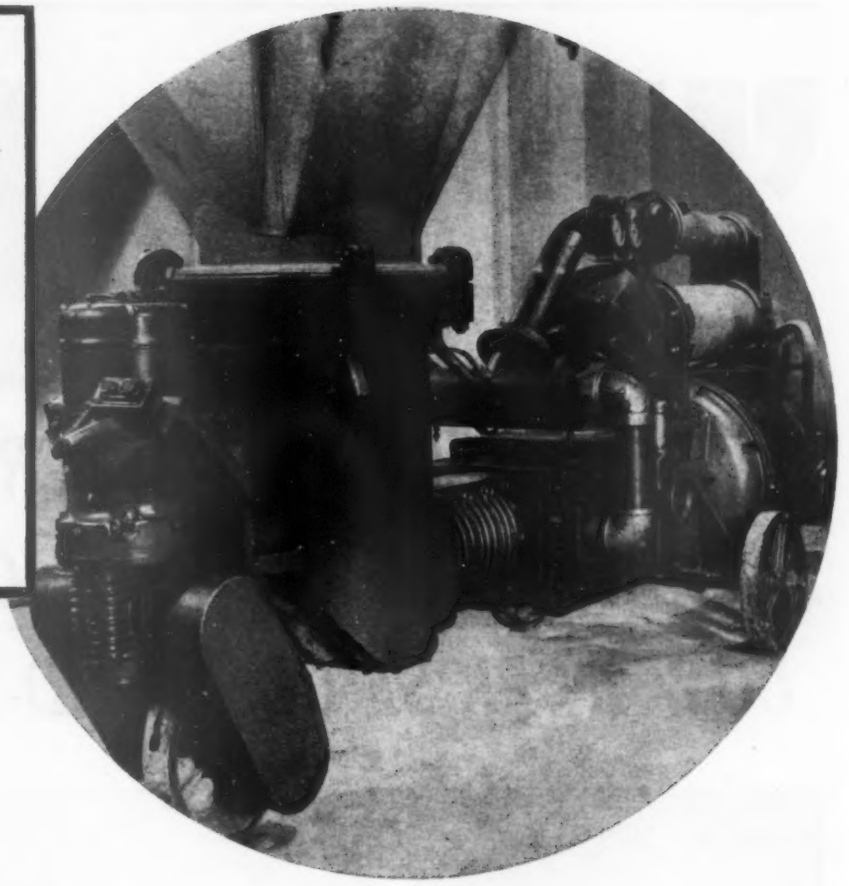
with a minimum of upkeep

Superior ENGINES

SUPERIOR DIESELS • MARINE • STATIONARY • LOCOMOTIVE

Division of THE NATIONAL SUPPLY CO., Plant and General Sales Office: Springfield, Ohio

A NEW ADAPTATION OF THE FULLER-KINYON PUMP



Trackless-Portable Pump . . . *for* conveying dry pulverized materials from bins and silos

ADVANTAGES

Low head room

No contamination

Dustless operation

Low installation cost

Low maintenance and operating cost

Can be moved to any aisle or position, from one point of discharge to another

Connections quickly and easily made, without dust or loss of material, to outlet in bin or silo

Ease of arrangement for recirculating, blending or transfer of materials

Elimination of shutdowns, time losses and labor costs encountered when mechanical conveyors become jammed

Direct, straight-line conveying through pipe lines to packer bins or other points of discharge. Eliminates bridges, towers and other costly supporting structures.

Fuller-Kinyon Pumps have for many years been used in the chemical-process and other industries for conveying dry pulverized materials. They have been built in stationary, portable, (running on tracks) and unloader types. Now, the latest development, trackless-portable self-propelled, is being installed to replace obsolete mechanical conveyors under bins and silos.

When you have a conveying problem consult Fuller engineers. The knowledge they have accumulated over many years will enable them to tell you quickly whether or not Fuller equipment will serve you to advantage.

FULLER COMPANY, CATASAUQUA, PA.

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FULLER COMPANY

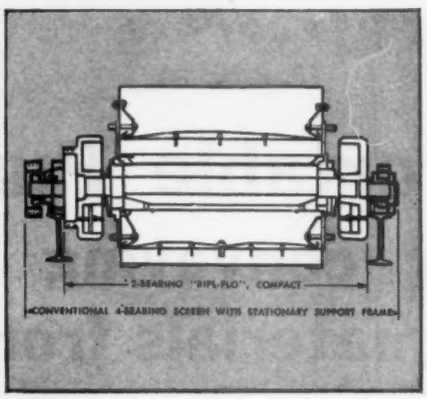
FULLER-KINYON, FULLER-FLUXO AND THE AIRVEYOR CONVEYING SYSTEMS . . . ROTARY FEEDERS AND DISCHARGE GATES . . . ROTARY AIR COMPRESSORS AND VACUUM PUMPS . . . AIR-QUENCHING INCLINED-GRATE COOLERS . . . DRY PULVERIZED-MATERIAL COOLER . . . AERATION UNITS . . . MATERIAL-LEVEL INDICATORS . . . MOTION SAFETY SWITCH . . . SLURRY VALVES . . . SAMPLERS

P-74

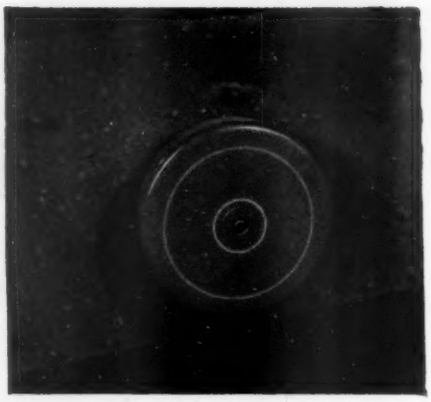
"RIPL-FLO"

HERE'S A VIBRATING SCREEN, DESIGNED FOR ALL GENERAL APPLICATIONS, THAT'S LOW IN FIRST COST AND MAINTENANCE!

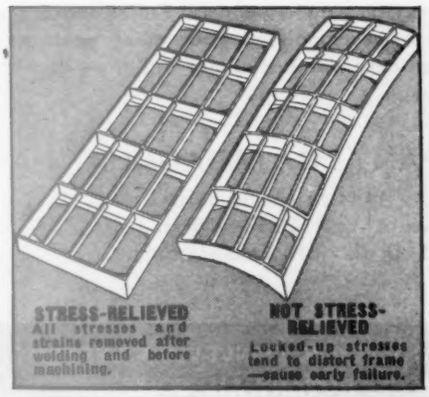
1 2-bearing "Ripl-Flo" *costs less* than any comparable 4-bearing screen, yet it's warranted to do equal or better screening job! Hundreds of these *modern* screens are in use today all over U.S.!



2 Here's one reason A-C can build "Ripl-Flo" for less money, pass savings on to you: Unnecessary outer bearings and stationary support frame are eliminated—reducing width 17%, weight 36%!



3 Balanced mechanism imparts a *perfect circle throw* to every point on screen surface. Result: uniform travel of material; rapid stratification; full capacity; and smooth performance all the way!

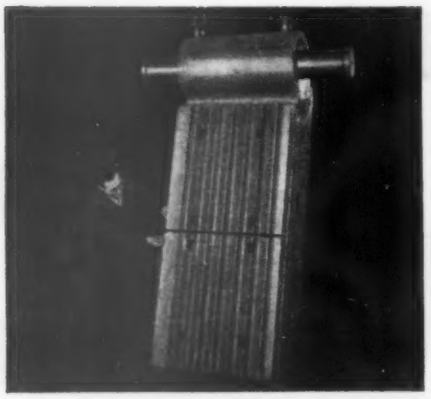

STRESS-RELIEVED
All stresses and strains removed after welding and before machining.
NOT STRESS-RELIEVED
Locked-up stresses tend to distort frame —cause early failure.

4 Want low maintenance, longer equipment life? All welded parts on "Ripl-Flo" are stress-relieved—eliminating failure adjacent to welds, making entire structure uniformly strong.

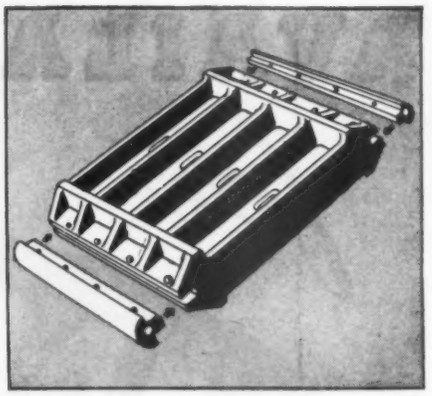
5 Every "Ripl-Flo" screen is shop-tested before it can go out to do a job for you. Operating in a special test rig, it is thoroughly checked for throw, balance, bearing temperatures, etc.

6 Call or write for new "Ripl-Flo" bulletin B6151B today. Contains quick facts as well as detailed specifications about most modern, low-cost screen in U. S.—how it's built, how it operates, etc.

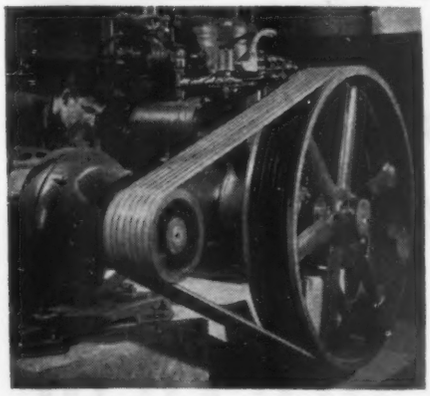
7 Another A-C machine designed to produce lower processing costs is new "A-1" Crusher. Its ⅛ *deeper* crushing chamber means *higher* capacity, *closer* setting, *lower* power, *less* slippage!



8 *Exclusive* suspended-type Jaw Plates permit expansion required by peening of steel. Renewable plates *behind* jaw plates provide firm backing, eliminate costly wear on jaw and frame!



9 3-piece toggle plate, with *renewable, machined* steel ends and seats supplied on 42″ x 32″ and larger sizes. Results in: *lower* bearing pressures; *longer* toggle and seat life; *lower* maintenance.



10 A-C is the *only* company that builds basic processing equipment *plus* motors, controls, Texrope drives. That means *unit-responsibility*—no "buck-passing"!

11 Planning ahead for more efficient power distribution in your plant? This scale model "Unit Substation Builder Set" can help you plan *visually*—saves time!

12 New A-C Solids-Handling Pump lowers cost-per-ton over comparable units—is representative of performance on other A-C pumps rated from 10 to 150,000 gpm.

UNDIVIDED RESPONSIBILITY—WHAT IT MEANS TO YOU!

A-C is the *only* company in U. S. that builds a complete line of mining and processing *plus* power and electrical equipment *right in its own shops!* That means that from *one* company you can get a "packaged" unit or process — with *inherently* higher efficiencies and lower operating costs. But even more important, it means there can be *no "buck-passing" on responsibility!* For, designing *all* this equipment to work together as a "team", A-C assumes *entire* responsibility for its performance! A 1890

ALLIS A-C CHALMERS

MILWAUKEE 1, WIS.

AVAILABLE

for

IMMEDIATE DELIVERY

by termination of war contract

- 25″x 40″ JAW CRUSHERS
- 20″x 36″ JAW CRUSHERS
- 40″x 22″ ROLL CRUSHERS

Rugged, long-lived roller bearing models with an unsurpassed reputation for all-around performance.

Phone or wire your nearby AUSTIN-WESTERN distributor, or this office for complete details.

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS.

SCOOPMOBILE

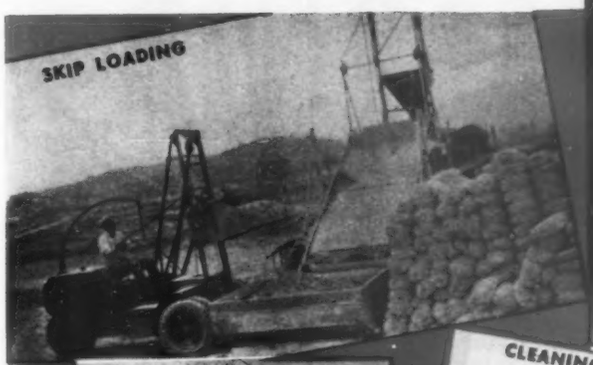
SOLVES YOUR LOADING and MATERIAL HANDLING PROBLEMS

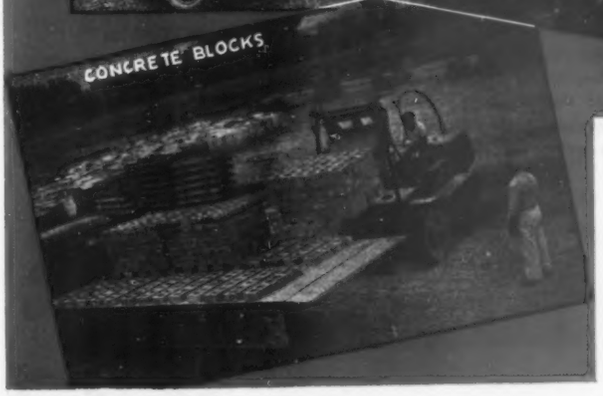
Money-Making Labor-Conserving

EQUIPMENT FOR

- COAL YARDS — REMOVING SNOW
- ROCK, SAND — TOP SOIL — FERTILIZER
- CONCRETE — CONCRETE BLOCKS
- SKIP LOADING — HOISTING
- MANY ATTACHMENTS AVAILABLE

Write Today For Details





DISTRIBUTORS

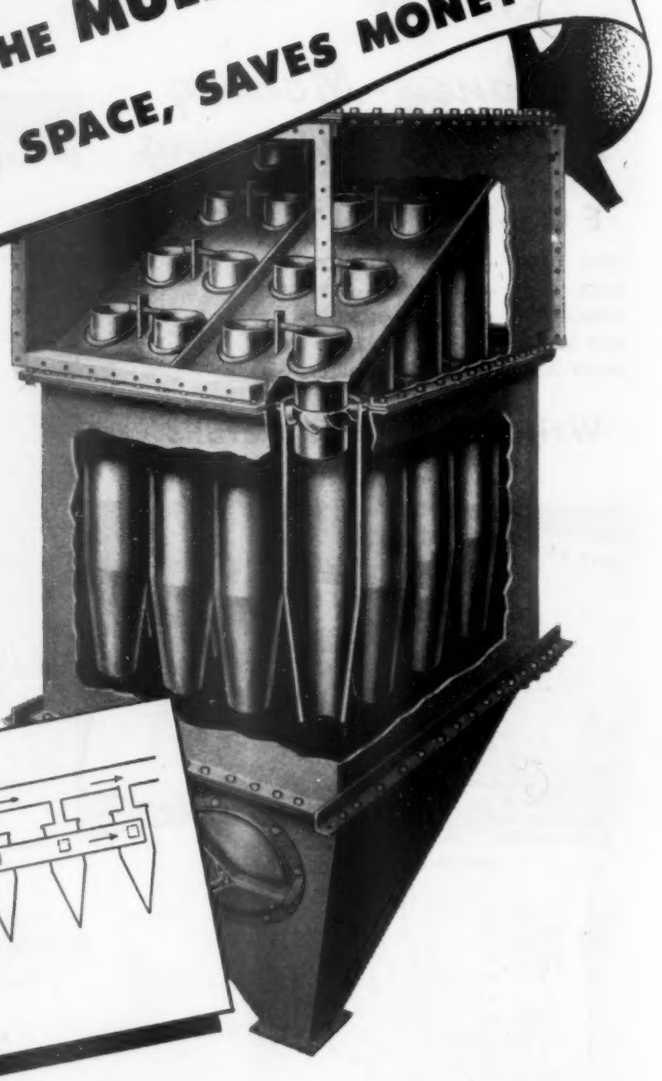
East of Mississippi River: Mixermobile Company, Inc.
608 So. Hill Street, Los Angeles-14, California

West of Mississippi River: Mixermobile Manufacturers
6855 N.E. Halsey Street, Portland-16, Oregon

THERE are *many* important advantages incorporated in MULTICLONE recovery equipment—high collecting efficiency, simple installation requirements, low maintenance and others. But probably one of the most important advantages on dust recovery installations is the unusual compactness of the MULTICLONE and its ready adaptability to small spaces—waste areas or out-of-the-way spaces too small for other equipment.

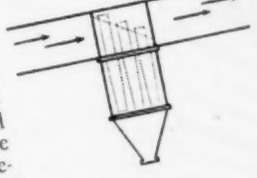
One of the reasons MULTICLONE equipment is so compact is the unique design of the collector tubes. The patented *vane* which guides and whirls the gases in each tube permits bringing the gases in at the *top* instead of the side of the tube. This, in turn, permits compacting *many* tubes into an extremely small space with *one* common header and eliminates the space-wasting ducts and multiple manifolds of conventional cyclones. . .

One COMMON INLET HEADER IN THE MULTICLONE SAVES SPACE, SAVES MONEY!



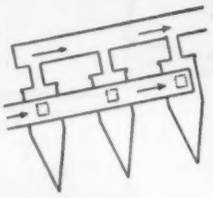
MULTICLONE DESIGN

Because of the vane in the MULTICLONE, gases enter each tube at the top from a single header that serves many tubes. Thus, collecting tubes can be compactly nested within the unit with no lost space between. Also the tube arrangement can be readily changed—long and narrow, short and wide, or square—to fit your particular space restrictions.



CONVENTIONAL CYCLONE

Conventional side-entry design necessitates complicated manifolding of inlet ducts to each individual tube. Result—not only difficult multiple duct requirements that increase installation costs, but also large areas of space are wasted between collecting tubes to accommodate ducts. In addition, this design is less adaptable to space restrictions.



WESTERN Precipitation CORPORATION

ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

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CHRYSLER BLDG., NEW YORK 17 • 140 S. DEARBORN ST., CHICAGO 3
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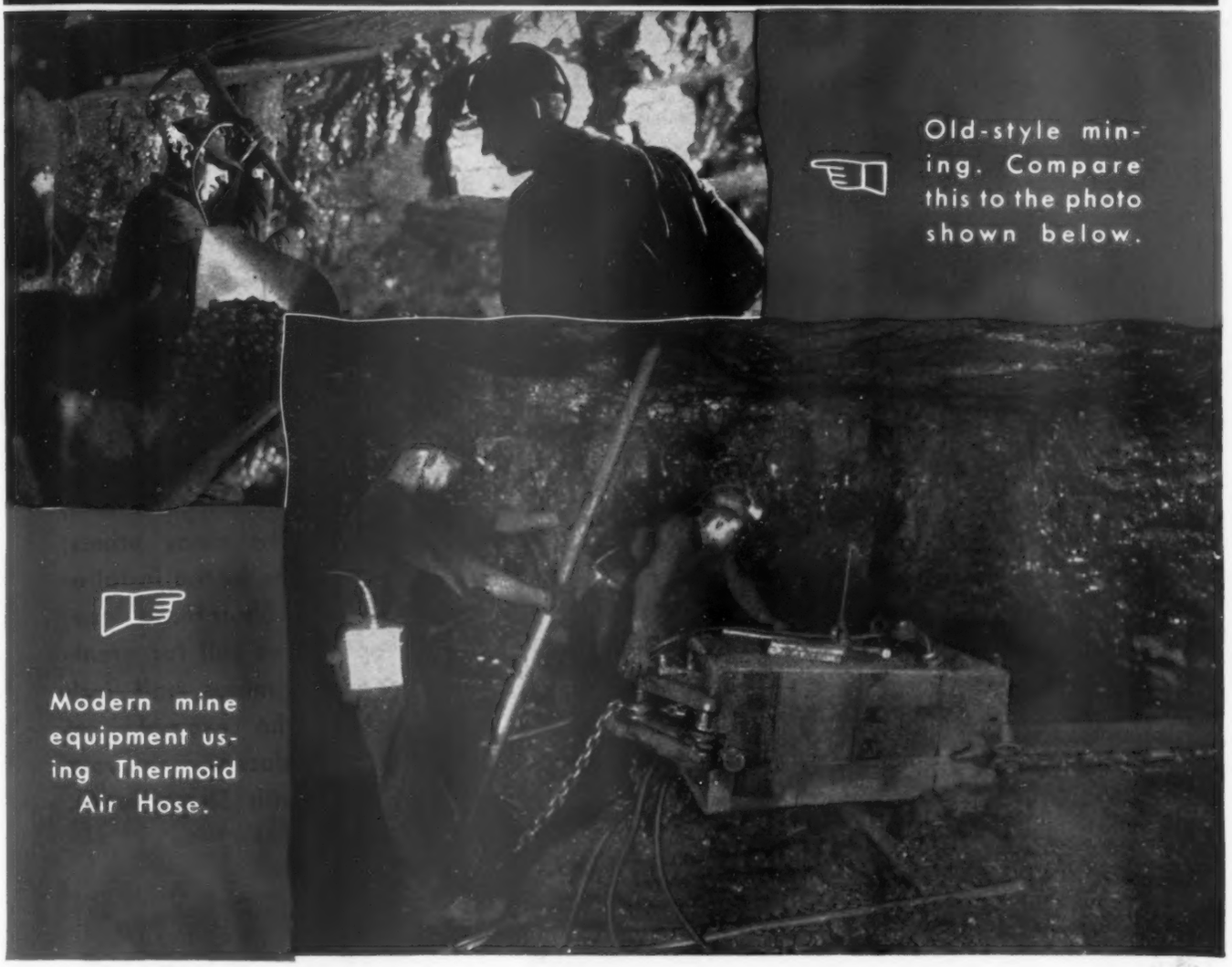
PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

REMEMBER—maximum compactness is just one of many advantages engineered into the MULTICLONE as the result of over 37 years' experience in dust recovery, beginning with the first commercial application of the world-famous COTTRELL Electrical Precipitator. Get the full MULTICLONE story by sending for this booklet. . .

Thermoid —Key to Progress in Many American Industries



Old-style mining. Compare this to the photo shown below.

Modern mine equipment using Thermoid Air Hose.

SINCE 1880, Thermoid has contributed to the progress of American Industry. Through three wars, and the intervening periods of peace, Thermoid engineering, research and manufacturing facilities have been devoted to the production of longer life parts for coal mining.

Thermoid stands today in a position, unsurpassed by any competitor, to contribute to the post-war progress of your industry. The Thermoid Line* of belting and hose for materials handling and power transmission may contain the key to another step forward in the improvement of your process and the reduction of your costs.—"It's Good Business to Do Business With Thermoid."

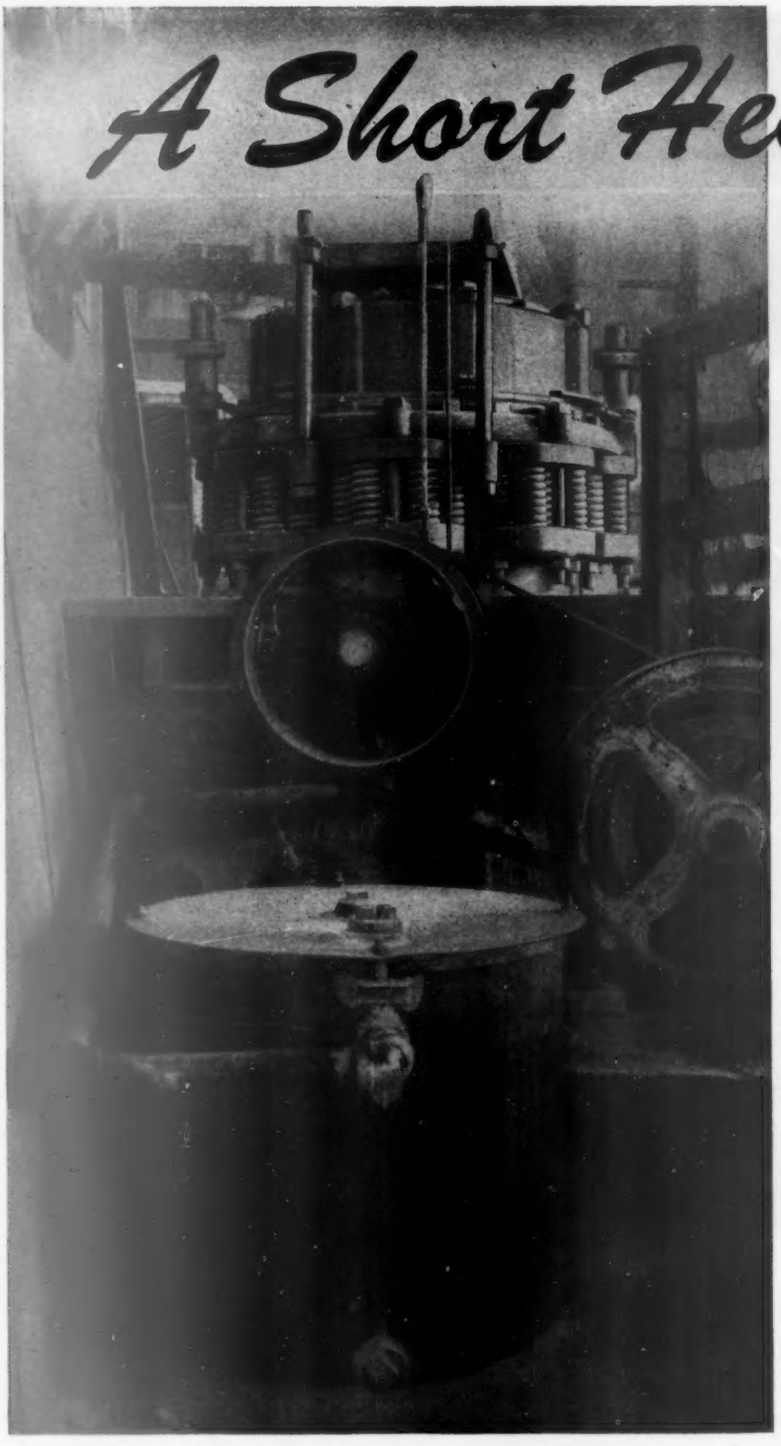
***THE THERMOID LINE INCLUDES: Transmission Belting • F.H.P. and Multiple V-Belts and Drives • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Sheet Packings • Industrial Brake Linings and Friction Products • Molded Hard Rubber and Plastic Products.**

Thermoid Rubber

DIVISION OF THERMOID COMPANY

TRENTON 6, NEW JERSEY

Contributor to Industrial Advancement Since 1880

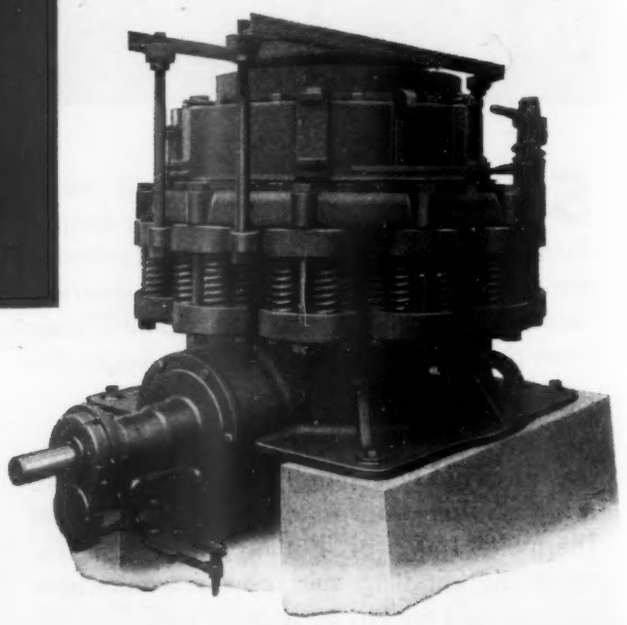


A Short Head Cone

IS THE ANSWER TO THE PROBLEM OF FINE CRUSHING....

In 1928 the Waukesha Lime and Stone Company installed a two foot Standard Symons Cone Crusher for its secondary crushing operation. Recent years have seen a steadily increasing demand for more and more finely crushed products, particularly agstone. To meet these changing conditions, this producer like many others, found the answer in the installation of a Symons Short Head Cone. If your operations call for greater tonnage of minus half inch sizes, follow the example set by leading producers — do your fine crushing with Short Heads.

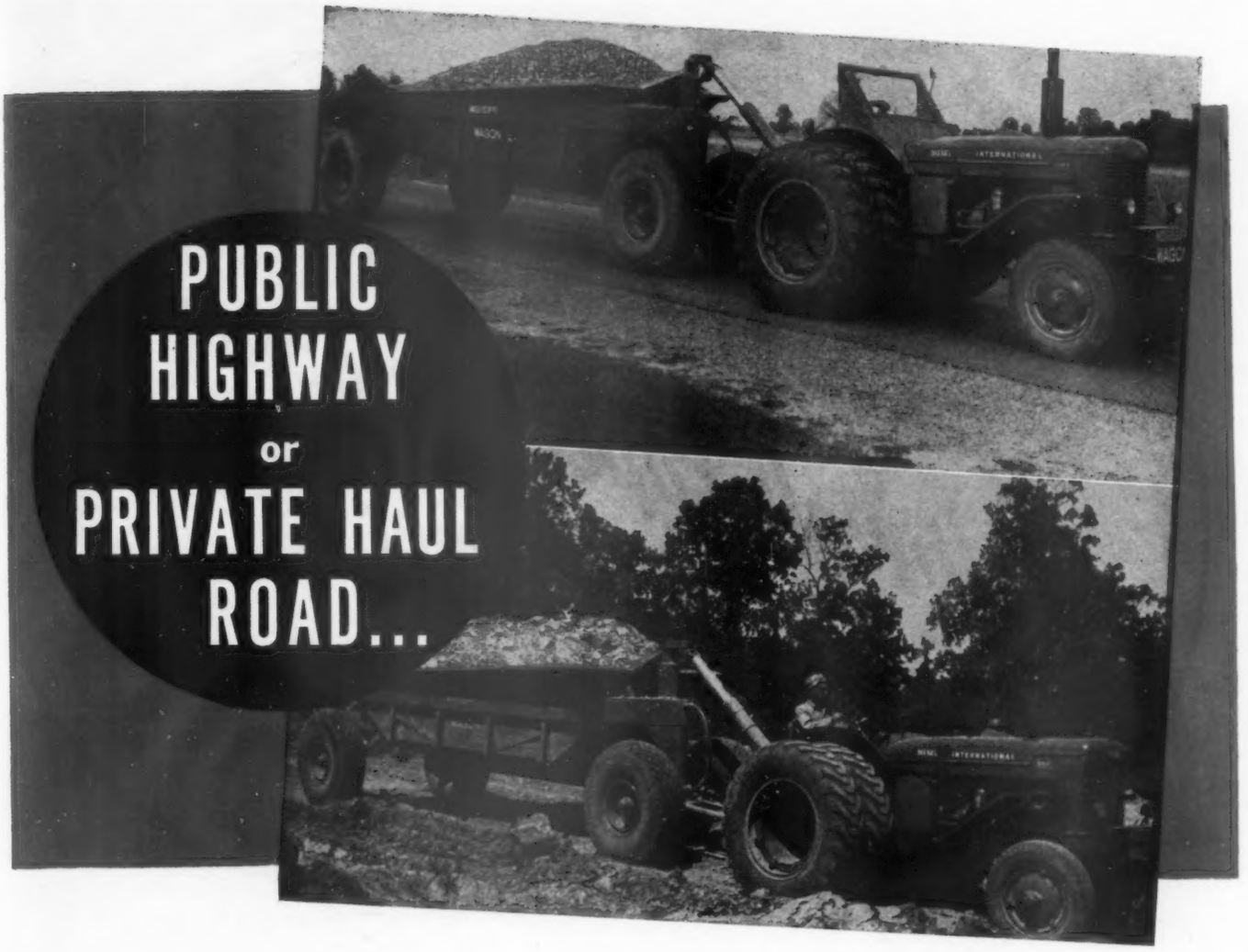
Three foot Symons Short Head Cone Crusher in the plant of Waukesha Lime and Stone Company, Waukesha, Wisconsin.



NORDBERG MFG. CO.
MILWAUKEE 7, WISCONSIN
NEW YORK • LOS ANGELES • LONDON • TORONTO • JOHANNESBURG

NORDBERG MACHINERY

SYMONS CONE CRUSHERS



Here's the versatile hauling unit that takes them both in stride!

• Long or short hauls . . . on or off the highway . . . it's all the same to Mississippi Wagons. Put them on your tough construction jobs, or use them for fast over-the-highway hauls . . . either way you'll get the big output and low yard-mile costs that have made Mississippi Wagons famous around the world.

Four-axle construction, made possible by the weight-transfer feature found exclusively on Mississippi Wagons, is the reason for their ability to handle such a wide variety of hauling assignments.

Four axles provide maximum flotation of the Mississippi Wagon and its load over spongy ground, permit travel over blacktop and other pavements without damage to road surfaces, and make it possible to haul 27,000-pound payloads on highways without exceeding state axle-loading limits.

All-round performance like this makes it unnecessary for the contractor to have a double investment in hauling equipment. A single investment in Mississippi Wagons puts you in a position to handle both construction and long-haul jobs—and to handle them at costs that will assure you of "all the profit there is in the job."

Write us, or consult your nearest distributor, for further information on Mississippi Wagons and recommendations as to which type or types will serve you most profitably.

M-R-S MANUFACTURING COMPANY ● Jackson, Mississippi

MISSISSIPPI WAGON *The World's Most Modern Hauling Unit*

It pays to be a Bemis Multiwall Paper Shipping Sack Customer!

For years, cement manufacturers have said, "It pays to be a Bemis Multiwall Paper Shipping Sack Customer." Wartime conditions brought this fact home in hundreds of instances. • Perhaps the most important reason is that Bemis made an unusual record in fulfilling shipping promises and in maintaining quality under wartime conditions.

Bemis Multiwall Paper Shipping Sacks

Peoria, Ill.
East Pepperell, Mass.

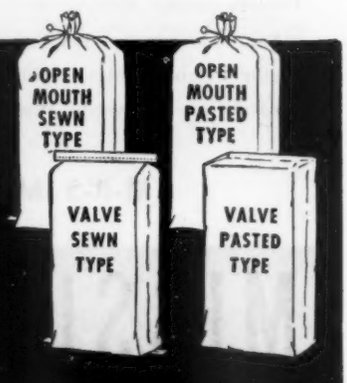
6 PLANTS

Mobile, Ala.
San Francisco, Calif.
Wilmington, Calif.
St. Helens, Ore.

BEMIS BRO. BAG CO.

OFFICES: Baltimore · Boston · Brooklyn
Buffalo · Charlotte · Chicago · Denver
Detroit · East Pepperell · Houston · Indianapolis · Kansas City · Los Angeles · Louisville · Memphis · Minneapolis · Mobile

New Orleans · New York City · Norfolk
Oklahoma City · Omaha · Orlando
Peoria · St. Helens, Ore. · St. Louis · Salina
Salt Lake City · San Francisco · Seattle
Wichita · Wilmington, Calif.



HOISTS • BODIES • WINCHES
ROAD MACHINERY • CRANES
There IS a Reason
Gar Wood—World's Largest Manufacturer of Truck and Trailer equipment—earned this leadership through ability to engineer and build units of such outstanding performance that men who know equipment best specify Gar Wood.
BUY VICTORY BONDS
GAR WOOD INDUSTRIES, Inc.
DETROIT 11 MICHIGAN
GW
PACIFIC PCK CO

Other Products: • TANKS • HEATING EQUIPMENT • MOTOR BOATS

More tonnage per cost-dollar is the aim of every pit and quarry operator — that's why Primacord is depended upon to do more jobs today than ever before.

Primacord is effective because it's **SAFE.** It cannot be set off by friction, spark, or any ordinary shock.

Primacord is effective because it's **EASY TO HANDLE.** Light weight, plus tensile strength and flexibility, makes it practical for use in holes, tunnels, surface blasting and demolition work.

Primacord is effective because it can be guided. Its detonating wave is almost instantaneous — yet follows trunk lines in definite sequence so that front rows shoot first, relieving the pressure on back row shots.

Primacord is effective because it works all the way. A continuous line of Primacord from the top to the bottom of a hole insures complete detonation of each cartridge.

Primacord is effective because it's **ECONOMICAL.** It cuts loading time — eliminates the use of caps in the hole, and extra caps in deck loads or broken charges.

P-11

THE ENSIGN-BICKFORD COMPANY • Simsbury, Connecticut

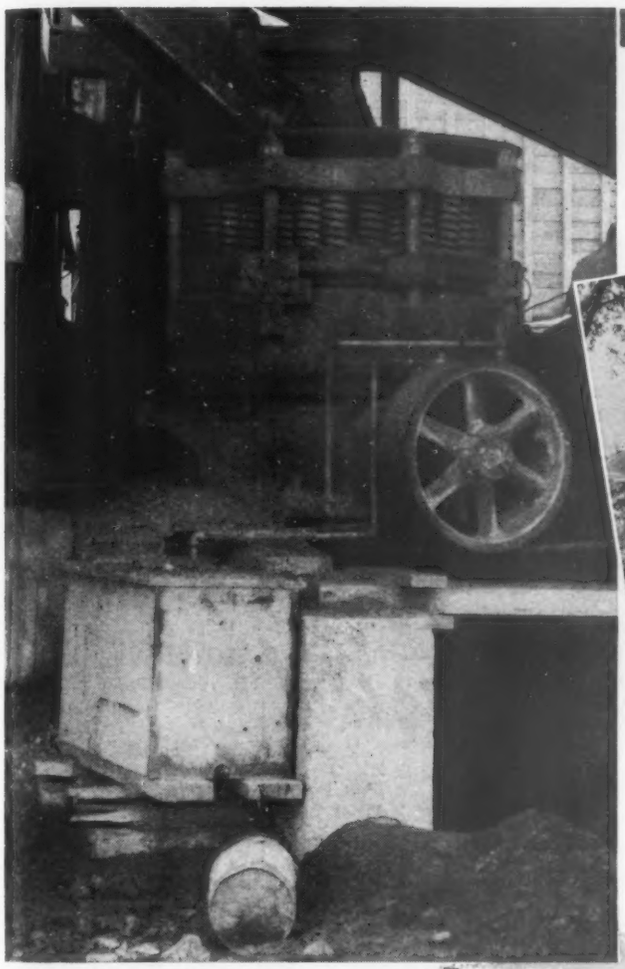
Five American dollars — as sound as these five reasons for using Primacord Detonating Fuse.

Manufacturers of
ENSIGN-BICKFORD
SAFETY FUSE
Since 1836

PRIMACORD-BICKFORD

Detonating
• Fuse •

BUILD IN *Increased Production and Lower Costs* WITH TELSMITH



TELSMITH GYRASPHERE CRUSHER

TELSMITH PRIMARY BREAKER

• The quarry plant of Abraham Cleason, Sodus, N. Y., is already effectually serving its expanding peacetime market for finer products—at a profit—now turning out 125 tons per hr. at full capacity.

This plant's *increased production,* particularly in the smaller sizes, was precisely planned—with the expert help of Telsmith engineers. And then *built in* with the right Telsmith equipment.

To be specific—a 36 in. Telsmith Gyrasphere Secondary Crusher . . . with special concave for fine crushing . . . was added to the plant to handle the tailings and the excess of larger sizes. These are recrushed to minus $\frac{1}{2}$" plus $\frac{1}{4}$" (N.Y. #1) and minus $\frac{1}{4}$" plus $\frac{1}{8}$" (N.Y. #1A) sizes—at top tonnage—with very low power and upkeep costs!

An all-around production booster has also been added—a Telsmith 4' x 12' Heavy Duty Apron Feeder built to take the heaviest loads the trucks can dump on it. And it's cutting maintenance costs right and left—on conveyors, crushers and screens. The original plant had a 13-B Telsmith Primary Breaker. With its higher speed, faster feeding and bigger capacity, it has been proving itself a low-cost producer for a long time.

Telsmith's 40 years of engineering know-how is at your disposal. Consultation involves no obligation. Send for Bulletin Q-15.

Q-14

SMITH ENGINEERING WORKS, 504 EAST CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Addresses: Sengworks, Milwaukee—Concrete, London

51 East 42nd St. New York 17, N. Y.	211 W. Wacker Drive Chicago 6, Ill.	713 Commercial Trust Bldg. Philadelphia 2, Pa.	247 Third Street Cambridge 42, Mass.	Boehck Eqpt. Co. Milwaukee 3, Wis.	Mines Eng. & Eqpt. Co. San Francisco 4—Los Angeles 14
Brandeis M & S. Co. Louisville 8, Ky.	Rish Equipment Co. Charleston 22, & Clarksburg, W. Va.	Rish Equipment Co. Roanoke 7, & Richmond 10, Va.	North Carolina Eqpt. Co. Raleigh and Charlotte 1, N.C.		Wilson-Weesner-Wilkinson Co. Knoxville 8, & Nashville 6, Tenn.

How a B-G Bucket Loader Can Save Money *the Year 'Round*

Truck loading time is cut to a minimum by the continuous operation of a Barber-Greene Bucket Loader. But more than that, the B-G Loader has year-round utility . . . can hustle along some construction or maintenance job each season.

★ The B-G Loader yields higher yardage, with less power, less weight, and less cost than any other method.

★ It can effectively handle a variety of loose materials—soil, sand, cinders, gravel or roadway debris.

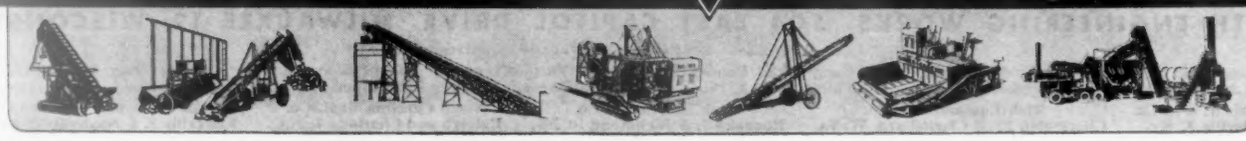
★ Clean pick-up is assured with the follow-up scraper that cuts to grade and does light excavating.

★ Top performance in stockpile or semi-compacted natural deposit loading, light excavating, shoulder shaping or stripping to grade can be maintained with the 12 selective crowding speeds.

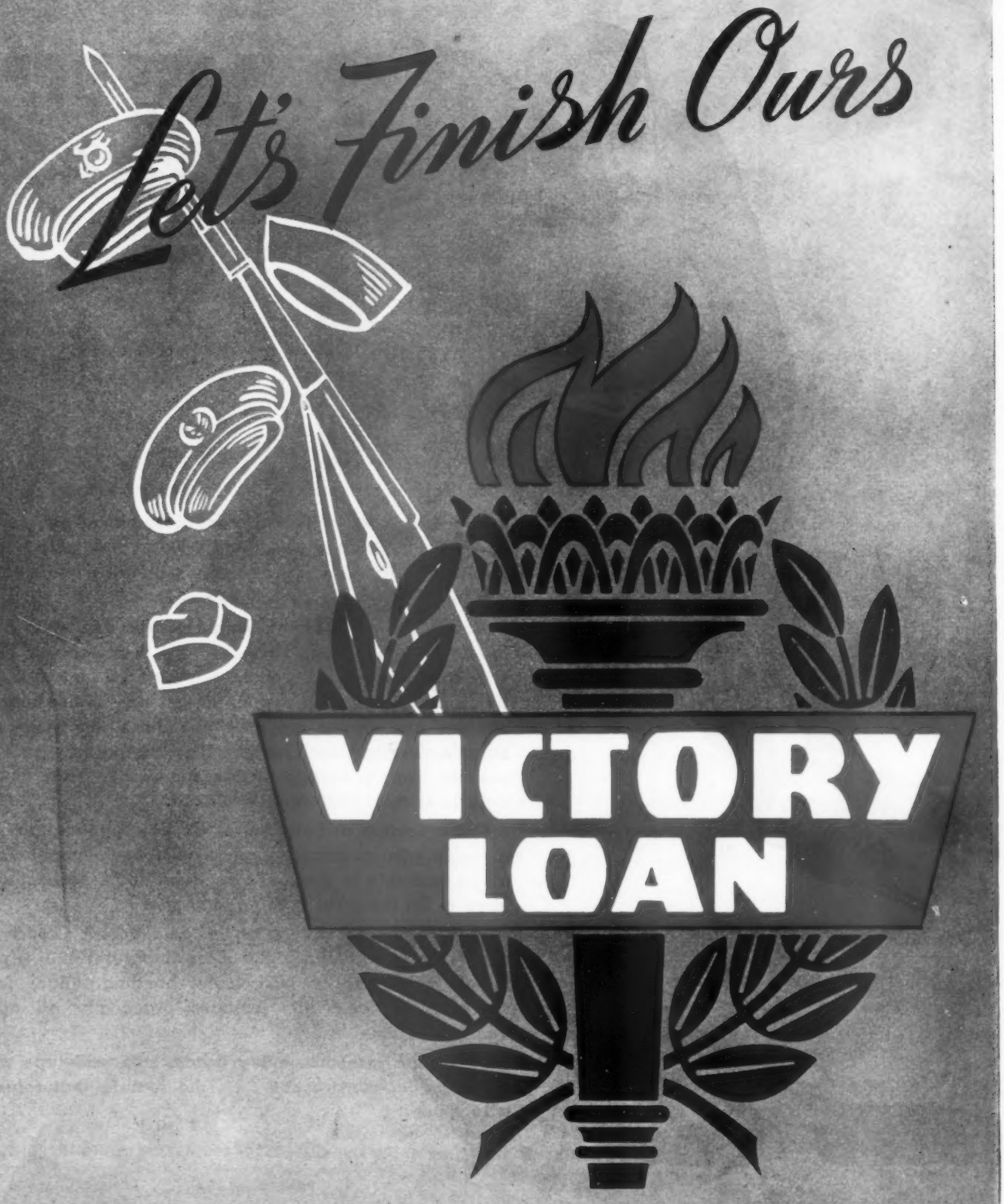
★ By substituting a B-G Snow Loader boom, the B-G Loader can be used for street snow removal.

Ask your B-G representative for details on the versatility and economy of B-G Bucket Loaders. Barber-Greene Company, Aurora, Illinois.

Barber-Greene B G *Constant Flow Equipment*



THEY FINISHED THEIR JOB . . .



This advertisement contributed by the

BOSTON WOVEN HOSE AND RUBBER COMPANY · CAMBRIDGE, MASS., U.S.A.

LIKE A CHAMPION SKATER

FORM-SET ROPE IS *relaxed*

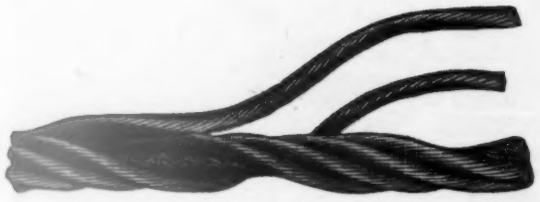
Ever watch a truly great skater? Ever watch him rocket down the straightaways, glide around the turns? He's graceful, swift, sure . . . a study in balance and smooth endurance . . . because he's *relaxed.*

You'll find much of that same relaxed quality in Bethlehem Form-Set rope. Form-Set rope is preformed; each wire and each strand is molded to its final helical shape before being laid in the rope. In this way many internal stresses and strains are relieved. Since the wires and strands are preshaped into their final form, they have no nervous urge to straighten themselves out. They do not fight to uncoil. The rope is *relaxed.*

Cut a section of Form-Set rope. You'll notice that not a single wire or strand pops loose from the rope. They all lie smoothly in place. To get them apart, you actually have to lift them out with your fingers.

What is the advantage of this *relaxation*? Clearly, it means easier handling. But more important still, it promotes *longer life* on jobs where bending fatigue is a serious item—and this includes practically all operating ropes.

Bethlehem furnishes every grade, size, and type with the Form-Set construction . . . the feature that *relaxes* wire rope.



Why a Form-Set (preformed) rope is relaxed. Preforming "sets" the wires and strands in their helical permanent shape, so that they have no tendency to fly apart, even when cut or broken.

When you think WIRE ROPE . . . think BETHLEHEM

Let an *EXPERT* look over your plant

...and make sound suggestions without cost or obligation

Soon now your plant will be ready to undergo its annual inspection to determine what is worn, what needs repair, what needs complete replacement.

That is a job calling for an expert—and an expert is available without cost or obligation. If your plant is within reasonable distance from one of our various offices, a Robins field engineer will visit it, examine your materials handling and processing equipment—then make authentic, authoritative suggestions and recommendations regarding the elements requiring attention.

It is possible, too, that he can offer reliable recommendations which can improve efficiency and promote economy in your operations. Recently, a Robins engineer showed the owner of a mid-western aggregates plant how a few changes in processes and machinery could modernize his 30-year old establishment and put it in a much better competitive position. Now, instead of making only two sizes, that plant can make six—in any desired combination or selection, depending upon current market demands.

We cannot promise to do as much for you. But we can promise that any suggestions made by Robins will be right—for they will be backed by nearly 50 years of experience concentrated on the one subject of handling bulk materials properly. The first stone plant designed by Robins—back in 1911—is still producing efficiently and economically. Many of the most modern aggregates plants in existence today are Robins-created and equipped.

Your plant needs a good going-over. Let an expert do it for you. A Robins field engineer is at your service (within the limits of transportation restrictions, of course) without cost or obligation. To arrange for such a call, please address PQ 11.

ENGINEERS, MANUFACTURERS AND ERECTORS OF MATERIALS HANDLING MACHINERY

ROBINS *makes:* BELT CONVEYORS · COAL AND ORE BRIDGES · BUCKET ELEVATORS · CAR AND BARGE HAULS · CAR DUMPERS · CAR RETARDERS · CASTINGS · CHUTES · CONVEYOR IDLERS AND PULLEYS · CRUSHERS · FEEDERS · FOUNDRY SHAKEOUTS · GATES · GEARS · GRAB BUCKETS · PIVOTED BUCKET CONVEYORS · VIBRATING SCREENS · SCREEN CLOTH · SELF-UNLOADING BOAT MECHANISMS · SKIP HOISTS · STORAGE AND RECLAIMING MACHINES AND SYSTEMS · TAKEUPS · LOADING AND UNLOADING TOWERS · TRIPPERS · WEIGH LARRIES · WINCHES · WINDLASSES

ROBINS
CONVEYORS
INCORPORATED
Founded in 1898 as Robins Conveying Belt Co.
PASSAIC • NEW JERSEY

FOR MATERIAL AID IN MATERIALS HANDLING . . . . . It's **ROBINS**

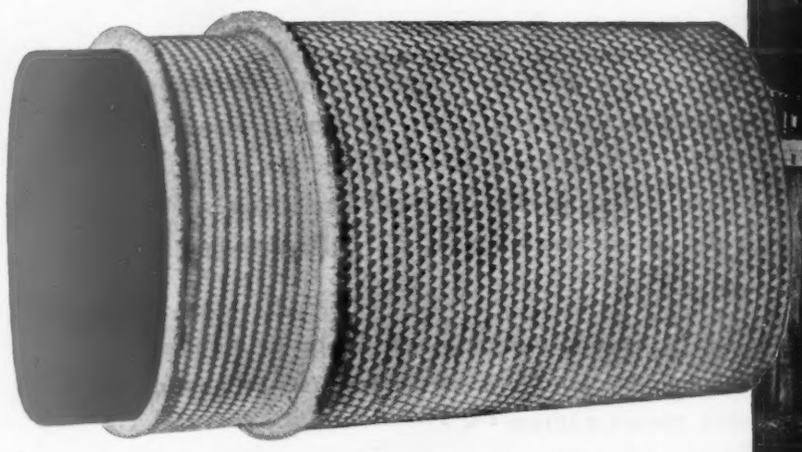
FIRE strikes swiftly!

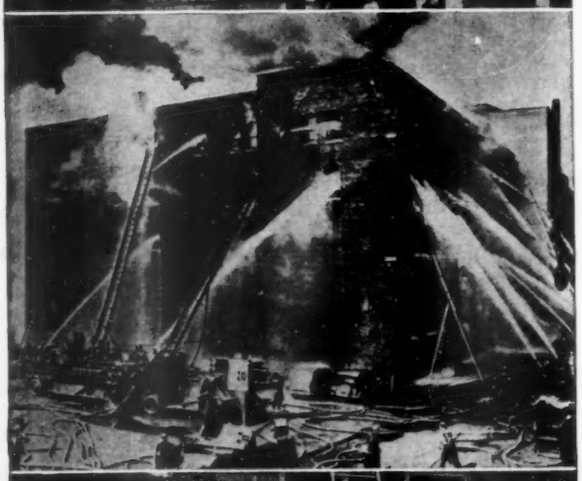
Every community, and every section of business: industry, mill or factory; all institutions, public and private; transportation companies, should check their fire fighting equipment, and the most important item of all is the Fire Hose.

QUAKER, during the war, manufactured millions of feet of Quality Fire Hose, and a large portion saw active service in many strategic points.

This dependable Quality Fire Hose is now available for all: city fire departments; industrial plants, mines and factories with their own Fire Departments; and those places where the volunteer fire fighting force acts as auxiliary until the city department arrives.

Whether you need 50 feet or 50,000 feet Quaker is ready to serve you promptly.





Better check your fire hose today. Then let Quaker supply you with their Quality Fire Hose for as many feet as you need to give you adequate protection.

QUAKER RUBBER CORPORATION

Mfrs Industrial Rubber Products

PHILADELPHIA 24, PENNSYLVANIA

NEW YORK • CLEVELAND • CHICAGO • HOUSTON

Western Territory

Quaker Pacific Rubber Company

San Francisco • Los Angeles

NEW... FULL-TIME OPERATING EFFICIENCY

with FAWICK CLUTCHES

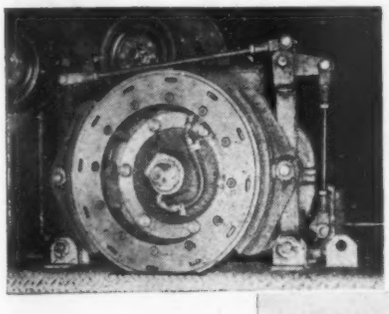
Keep them going—keep them free from down time—that's what Fawick Clutches do for earth-moving and material-handling machines.

This new Clutch controls power and torque through a cushion of rubber and air. It has no springs, arms or levers—requires no adjustments, no lubrication—has low maintenance costs.

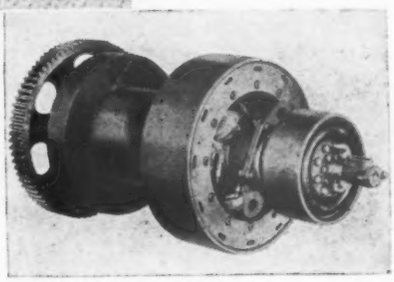
Let us help you engineer Fawick Airflex Clutches for your machines. Book on request.

The newest improved type of shovel is Fawick equipped—for more dependable, more economical operation.

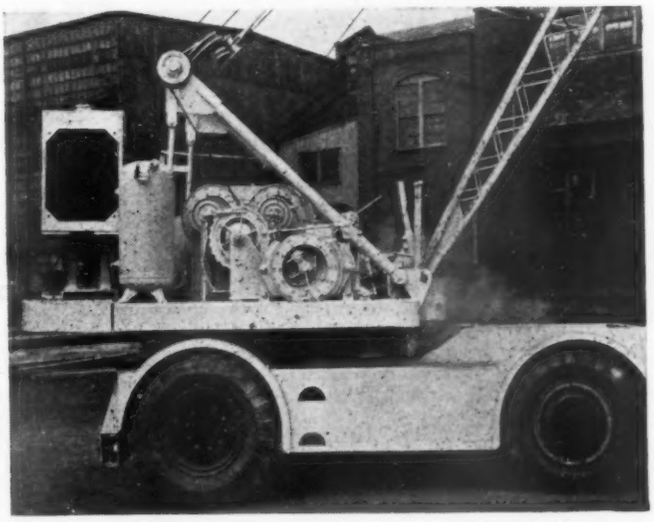
Fawick Clutches are providing new efficiency for shovels, cranes, draglines and hoists.



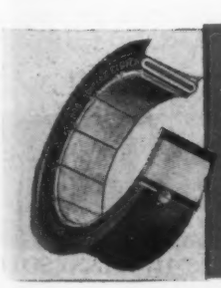
Main propel mechanism of the Shovel above—Fawick equipped.



Hoist drum assembly of the Shovel above—Fawick equipped.



Seven Fawick Clutches are used on the new Byers ½ cu. yd. "Traveler".



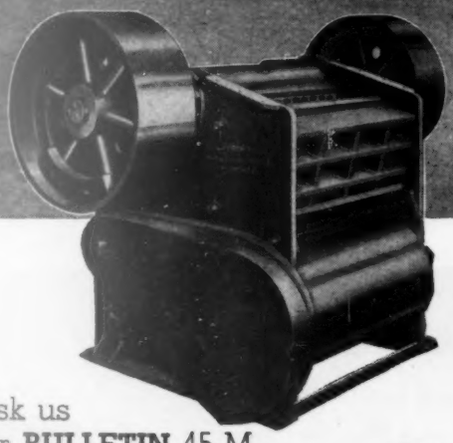
FAWICK *Airflex* CLUTCH

FAWICK AIRFLEX CO., INC. • 9919 Clinton Road, Cleveland 11, Ohio

In Canada, Reynold-Coventry Ltd., Montreal, Toronto, Vancouver • In Britain, Crofts Engineers, Ltd., Bradford, England

DIAMOND

DUAL-ACTION, portable CRUSHING AND SCREENING PLANT



HERE'S THE PLANT the Trade's Talking About!

Ask us for **BULLETIN** 45-M

This DIAMOND bulletin gives you complete information about the DIAMOND plant illustrated on this page. It also gives you complete information about the DUAL-ACTION crusher, fully illustrating and explaining its amazing, new crushing principle. Ask us for this bulletin.

Other DIAMOND Units

Jaw Crushers
Roll Crushers
Hammermills
Conveyors
Vibrating Screens
Scalping Screens
Scrubber Screens
Drag Washers
Feeders
Bins—Hoppers
Grizzlies

Note these features:

SHORTER. The DIAMOND DUAL-ACTION plant is several feet shorter than conventional crushing and screening plants. This is accomplished by the use of the remarkable new DUAL-ACTION crusher which combines the primary (jaw) and finishing (roll) crushers into one smaller, lighter, more efficient unit. No waste space in the DUAL-ACTION plant!

LIGHTER. Since the entire plant is shorter, requiring less frame, etc., since the DUAL-ACTION crusher weighs about half the combined weights of the conventional jaw and roll, this plant weighs fully one-third or more less than other portable plants. Comes well within most rigid highway load limits.

MORE EFFICIENT. Actually, due to the new crushing principle of the DUAL-ACTION crusher, advanced plant design, and other factors, the DIAMOND DUAL-ACTION plant is more efficient, and will produce more material faster and with less power, thus increasing the profit from its use. Remember, no other plant can give you the ultra-modern DIAMOND DUAL-ACTION crusher. Ask for details.

DIAMOND

DIAMOND IRON WORKS, INC.
AND THE MAHR MANUFACTURING CO. DIVISION

1801 SECOND STREET NORTH — MINNEAPOLIS 11, MINNESOTA

ROTARY KILNS

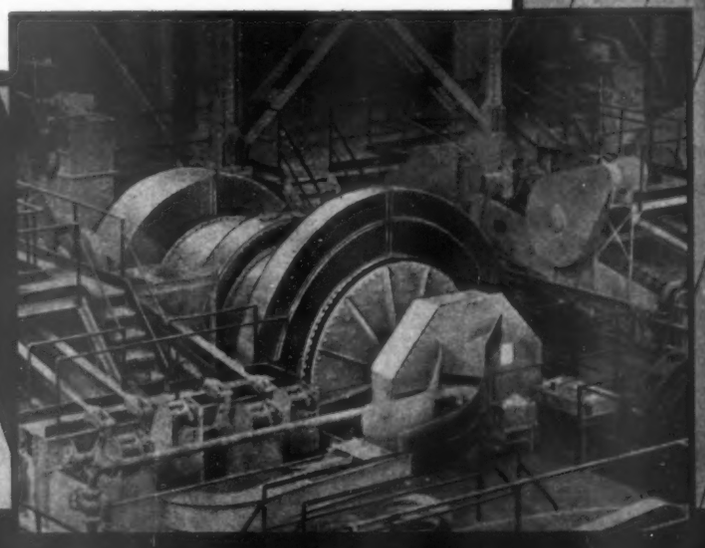
ROTARY KILNS

For sintering, nodulizing, calcining, desulphurizing and oxidizing and reducing roasting—also coolers, pre-coolers, preheaters, recuperators—and their accessories.

GRINDING MILLS

Ballmills, tubemills and multi-compartment mills—wet or dry grinding—open or closed circuit—also air swept for grinding and drying.

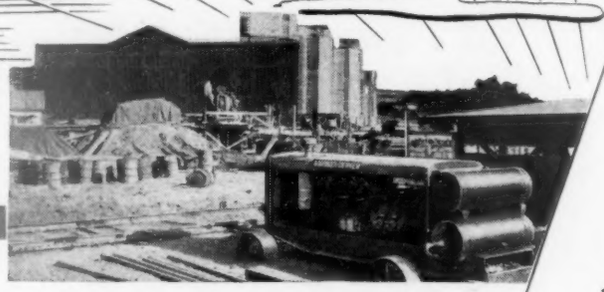
GRINDING MILLS



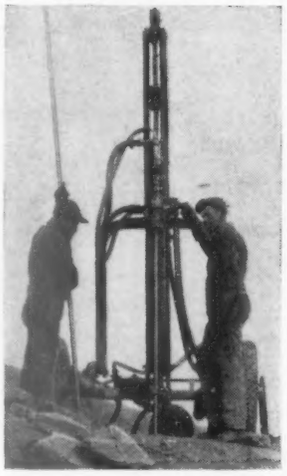
F. L. SMIDTH & CO.

11 WEST 42ND ST. ENGINEERS AND MACHINERY MANUFACTURERS NEW YORK, N. Y.

A NEW HORIZON FOR POSTWAR JOBS



To keep pace during the period of great postwar activity—to get the jobs done fast and well at the lowest cost—you will want Gardner-Denver equipment. Proved on the most grueling jobs, its rugged construction and superior design permit continuous operation—assure minimum operating and maintenance costs.



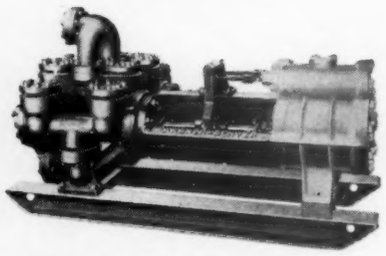
Gardner-Denver Wagon Drills—highly maneuverable on hillside or rough ground, spot quickly, drill fast.

Gardner-Denver Sinkers—easily handled because of their perfect balance and smooth operation—speed up drilling.

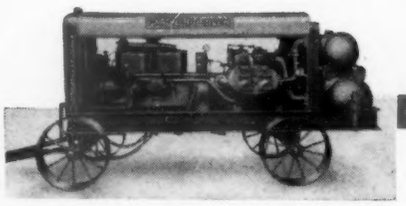
Gardner-Denver Spaders—for faster footage in any digging job.

Gardner-Denver Pavement Breakers deliver fast cutting blows for demolition work.

Gardner-Denver Backfill Tamper—fast, powerful, easy to walk over the fill.

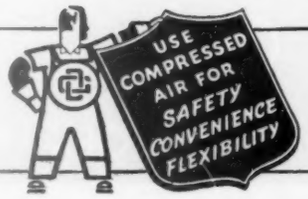


Gardner-Denver Grout Pumps—built tough—offer resistance to the wear caused by abrasive cement.



Gardner-Denver Water Cooled Compressors—completely water jacketed to provide continuous cool operation and discharge temperature.

For complete information on Gardner-Denver equipment, write Gardner-Denver Company, Quincy, Illinois.



GARDNER-DENVER *Since 1859*

• With the Badger, only the bucket, boom, turntable and mast swing. The heavy main deck, engine, transmission and main frame are STATIONARY—to counterbalance heavier loads and avoid objectionable tail-swing.

The Badger makes more swings per minute, day, month and year . . . wastes no fuel or power swinging extra weight . . . digs the hardest "diggable" material . . . can work in closer quarters.

Profits are made by working fast and saving time. Clipping a few seconds off each dig-swing-dump cycle means more yardage at the close of the day.

The Badger is readily convertible to crane, dragline, trench-hoe, pile driver and skimmer . . . travels on special wheel mounts from job to job at motor truck speeds.

Released from its duties with the Armed Forces, the Badger is once again available for prompt delivery. Your nearby A-W Distributor will be glad to tell you the whole story.

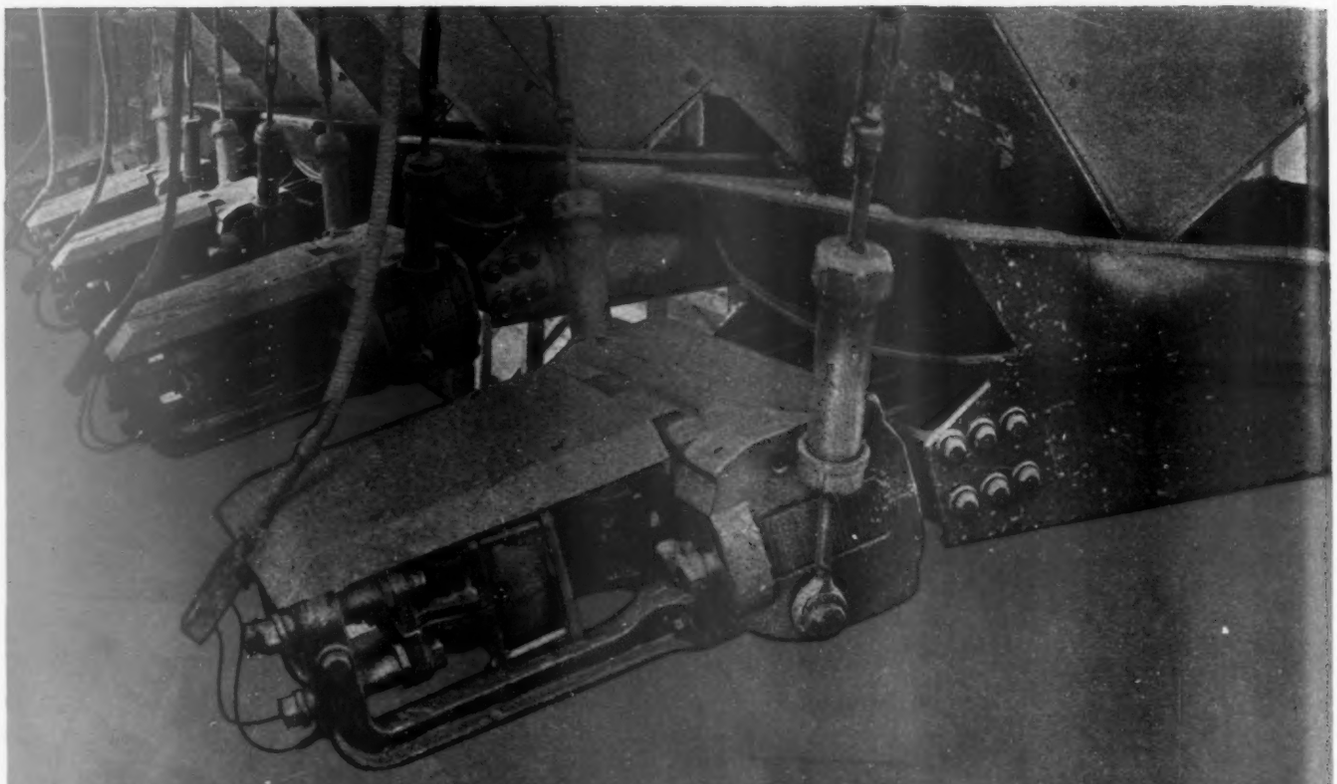
AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U. S. A.

BUILDERS OF ROAD MACHINERY SINCE 1859

Austin A Western

ARMY E NAVY

BUY MORE WAR BONDS



CONTROLLED FEED

This battery of Jeffrey-Traylor electric vibrating pan feeders provides a positive-controlled feed to a bank of vibrating screens.

This results in greater plant capacity and higher screen efficiency, for the rate can be instantly regulated to suit the varying feed to the screens.

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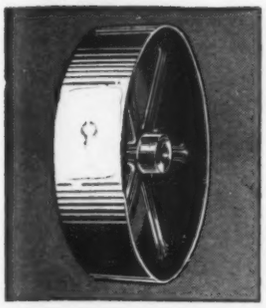

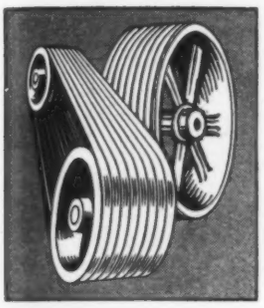

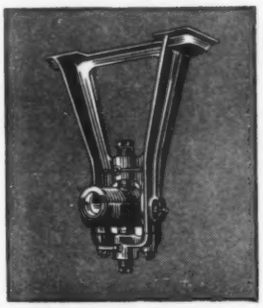

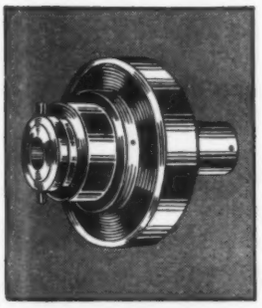

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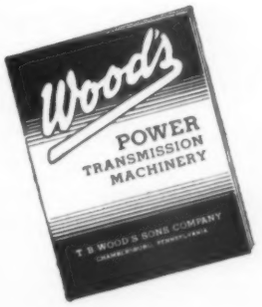

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PIT AND QUARRY

NOVEMBER, 1945

Vol. 38 No. 5

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EDITORIAL

What's Ahead in Labor Relations?

FROM reading and listening to most current comments on present-day relations between employers and workers it is easy to get the notion that the country's industrial production is practically at a standstill, that the strikes and threats of strikes which have followed the ending of the war are unprecedented in their number and intensity, that the extinction of private enterprise is at hand, and so on. Many of us are too busy playing our individual roles in carrying on the system of private enterprise to realize that the struggles and changes we are witnessing are part of the natural pattern of post-war readjustment and there is reason for believing that we may be able to reconcile ourselves to the acceptance of these changes more rapidly—and, possibly, also less painfully—than did our predecessors of a generation ago.

Published estimates of the number of workers who have gone on strike since V-J Day ranges from 400,000 to 525,000; the actual number may be somewhat larger than the latter figure, say, 600,000. At no one time, however, does it appear that the number of strikers exceeded 275,000. The number of strikes reported is small, and relatively few of the total number of workers in the country have been involved, but their effects have been disproportionately serious because many of them have been conducted in accordance with the strategy of industry-wide rather than craft-wide labor organization. In this fact are to be seen the greater power and effectiveness of the vertical or industrial type of union as compared with the horizontal or trade type of labor organization.

After the end of World War I the United States experienced a wave of strikes which, with respect to the number of work stoppages and the number of workers involved, makes our present difficulties appear to be less serious than we have been led to believe. In 1919, the first full year after the end of the war, there were 4,450 strikes and they involved 4,160,348 employees, or about eight times the largest number of workers estimated as having gone on strike since the end of World War II. The steel strike, which began late in 1919, involved 365,000 members of 24 unions which joined in a struggle for objectives that were not achieved. A month earlier 250,000 railway shopmen, although forbidden by their union officers, went on strike as a protest against the delay on the part of the Wage Adjustment Board in reaching a decision on their demand for higher wages. Later in the same year 435,000 workers in the bituminous-coal-mining industry struck for higher wages and shorter hours, and four months later received a 27-per cent. increase in their rates of pay. In 1920 the number of strikes, although still large (3,411), involved only 4,463,054 workers, while in 1922, with strikes numbering only 1,112, the employees involved numbered 1,608,321, of whom 600,000 were anthracite and bituminous-coal workers and 500,000 were railway shopmen.

In 1917, when the United States entered World War I, the American Federation of Labor discouraged strikes in essential industries, and the few that occurred were mediated by government committees. In World War II labor voluntarily offered a no-strike pledge and most of the industrial disputes that did arise were settled through conciliation or through what was practically compulsory arbitration by the National War Labor Board, which was the modern form of the War Labor Adjustment Boards set up by the government in World War I.

As these words are being written, the National War Labor Board is in the process of dissolution and this fact, despite labor's dissatisfaction with many of its decisions, is causing the same type of resentment as was felt by workers after the end of World War I, when the War Labor Adjustment Boards were dissolved. In both wars labor felt that it had laid aside its most powerful weapon, the strike, with the expectation that its needs and rights would be protected by peaceful settlement. During and after the first war this expectation was not realized, and labor believed that it had been the victim of broken faith on the part of the government and the employers.

Unless our present government proclaims a definite policy with respect to wages and prices—one that will provide better protection against rising living costs than was afforded by the "Little Steel formula"—labor's disillusionment and bitterness will undoubtedly be even greater than they were in 1919, and the number and severity of strikes in key industries may be expected to increase. Nor will business be any less displeased if that policy fails to provide means for considering and giving effect to the point of view represented by owners and management.

EMPLOYERS whose profits in recent years have been enhanced by the war naturally hope to be able to keep them at that high level and even, indeed, to increase them, for no normal business man accepts any year's accomplishment as the limit of his possible attainments. Workers whose earnings have arisen because of the war naturally hope to be able to maintain them at the war-time level and to increase them, if possible, for no normal worker believes that his highest yearly income represents the limit of his possible annual earnings. It may be possible to satisfy the expectations of both groups, but it can not be done in an atmosphere of antagonism and wrangling. Both sides must show a disposition to make concessions and to give consideration, too, to the interests of the general public, which buys the products of their joint efforts and ultimately provides both profits and wages.

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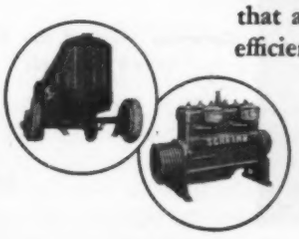

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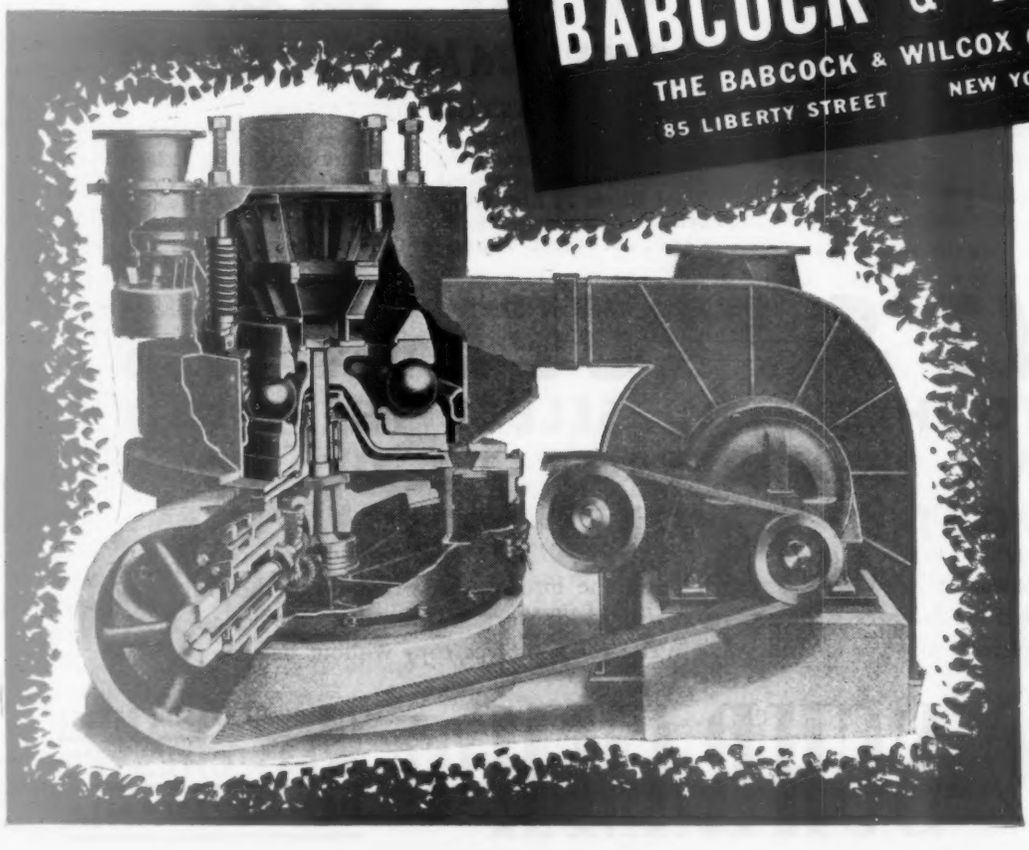


Cut-away view of the B&W Type E Pulverizer

C-59

PIT AND QUARRY

CHICAGO NOVEMBER, 1945

$500,000,000 Bill For Highway Aid Becomes U. S. Law

The Federal-Aid Highway Act of 1944 became immediately operative through the adoption by the House and the Senate of H.C.R. 81, which does not require signature by the President. The program laid down in the highway act provides for federal earmarking of $500,000,000 annually for the next three years, each state's quota to be matched by it on a dollar-for-dollar basis. Of the federal money $225,000,000 will be spent for federal-aid highways, $150,000,000 for secondary roads, and $125,000,000 for urban highways.

Governor Robert S. Kerr of Oklahoma recently told groups interested in better roads to urge the Congress to double its present post-war highway construction program. (Federal grants totaling $1,500,000,000 in the next three years, to be matched by state funds, are contemplated by the Congress.)

Production Resumed At Hat Island Plant

After having lain idle for many years, the pit and plant of the old Hat Island Sand & Gravel Company on Gedney Island (more popularly known as "Hat Island" in the Seattle area) is again in production under a lease arrangement with the Klinker Sand & Gravel Company of Seattle.

Eventually, after much needed new equipment is installed, it is expected that production will be in the neighborhood of 1,000 cubic yards daily. At present, however, limitations in the equipment set-up are allowing production of considerably less than one half that amount. Before operations could begin at all, it was first necessary to replace many of the electric motors and to thoroughly service much of the old equipment. About $30,000 has been expended in recent months by the Klinker company to get the plant in shape to operate.

The output is shipped by barge to the mainland and a work boat operates between the island and Everett, Washington, on an every-other-day schedule. The plant employees live on the island.

Orville Leech, formerly plant-maintenance man at Klinker's plant in Seattle, is superintendent of the Hat Island operations.

Briefs of E. C. Schroeder Company Case Available

Copies of the *amicus* brief filed by counsel for the National Sand and Gravel Association in the E. C. Schroder Company, Inc., case, now pending before the United States Circuit Court of Appeals for the 10th Circuit, may be obtained by applying to the association at the Munsey Building, Washington 4, D. C.

Coming Events

January 22-24, 1946—Cincinnati. Annual convention. National Sand & Gravel Association, Netherland Plaza.

January 23-25, 1946—Cincinnati. Annual convention, National Ready Mixed Concrete Association, Netherland Plaza.

January 27-31, 1946—Chicago. Annual meeting, Associated Equipment Distributors, Edgewater Beach Hotel.

January 28-30, 1946—Cincinnati. Annual convention, National Crushed Stone Association, Netherland Plaza.

January 31-February 1, 1946—Cincinnati, Agricultural Limestone Division, National Crushed Stone Association, Netherland Plaza.

Remove Restrictions On Home Building Loans and Materials

Pre-war financing facilities under the FHA program are again available to the millions of home owners who postponed repair, improvement or modernization of their properties because of wartime restrictions. All restrictions on loans for repairs and improvements were removed and all limitations on materials for such purposes were lifted on October 15.

About 4,500 qualified lending institutions throughout the country can resume making loans under the peacetime regulations of F.H.A.'s Title I operations. Such loans may be for maximum amounts of $2,500 and run for maximum term of three years, repayable in monthly installments.

Federal Portland Starts Plant Expansion Program

Announcing a $500,000 expansion program for its plant in Buffalo, New York, the Federal Portland Cement Company, Inc., has disclosed the establishment of a new rock wool plant there.

The expansion, which will enlarge total plant facilities about 30 per cent., includes the construction of a new $150,000 plant addition to the south of the present buildings for the rock wool operation; a $200,000 modernization of Portland cement production machinery and equipment and the construction of nine additional cement-storage silos at a cost of $100,000; the erection of a new laboratory for research and manufacturing control.

Portland cement production, halted by Federal during the war (except for grinding of cement clinkers), will be resumed on a 50 per cent. of capacity basis upon the completion of reconversion work on one of the kilns.

Cement Industry Loses a Leader—George S. Bartlett

George S. Bartlett, assistant to the chairman of the board of the Portland Cement Association since 1931, and widely known as the "father of the concrete highway," died in Chicago on October 21 at the age

George S. Bartlett

of 78. Mr. Bartlett, who was said to have sold more cement than any other living man, had been associated during his 60 years in the industry with the Milwaukee Cement Company, the Western Portland Cement Company, the Marquette Cement Manufacturing Company and the Universal Atlas Cement Company.

As a mark of honor and respect, the George S. Bartlett Award was created in 1931 by the American Association of State Highway Officials. The plaque is presented annually to a selected individual "for outstanding contribution to highway progress".

Carney Company to Make Extensive Improvements

The Carney Company, Inc., of Mankato, Minnesota, has announced plans for expansion in 1946. The projected plans include modernization of the cement plant, already in progress, and the building of two additional cupolas to increase tonnage in the rock wool plant by 75 per cent.

In addition, the company will operate a crushed rock business, producing agstone, riprap, crushed rock, concrete and dust for asphalt filler.

W.P.B. Seeks Jobs for Wartime Personnel

With the functions of the War Production Board rapidly drawing to a close, efforts are being made to give assistance to a number of the Board's personnel who are returning to industry after serving their government during the war years.

J. A. Krug, Chairman of the W.P.B., has set up an Industry Personnel Committee headed by David J. Winton, to serve as a job-finding group.

"Jobs are wanted," Mr. Winton has said. "Jobs for members of the War Production Board who have served their country so loyally, so efficiently during the past few years. Industry knows that these people are of high calibre. Industry can use their talents. These people came to the Board with years of experience in their respective fields. They have added to that experience, rounded it out, in their service to the government."

In the engineering field, W.P.B. is attempting to place 67 persons; 24 are industrial engineers, 20 civil, 8 mining, 7 mechanical and electrical engineers.

Firms who might need any of these men have been asked to communicate with the W.P.B. offices in New York, Chicago and Washington, where the complete job experience of the Washington personnel are on file and ready to be reviewed by industry. Experience has already shown that the Board has people to fill these needs.

Ship Bulkheads New Outlet for Gypsum

How gypsum went down to the sea in ships as a revolutionary type of bulkhead to give added fire protection to American Naval and Merchant Marine vessels during the war and at the same time save valuable weight, has been revealed with the lifting of war-time censorship. Gypsum met the rigid United States Coast Guard and Maritime Commission requirements in Class B bulkhead construction. As a result of its war experience, the gypsum bulkhead is likely to become standard construction in future shipbuilding because of its fire safety and light weight.

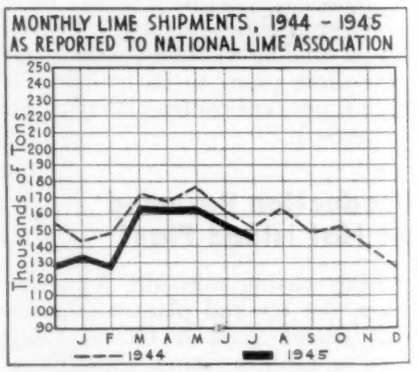
West Coast Producer Announces Large Expansion Program

Pacific Coast Aggregates, Inc., of San Francisco, reports a major expansion program costing approximately $2,500,000. A new $75,000 rock, sand and gravel plant is to be built at Elliott, California. Additional plants are to be put up at other sites, and expansion projects will be undertaken at the firm's plants at San Jose, Niles, Monterey and Felton, California. Another large undertaking will be the $1,000,000 improvements proposed at the distributing system and warehouses at San Francisco, Oakland, San Jose, Sacramento, Stockton and Fresno.

A. K. Humphries, Pacific Coast Aggregates president, states that the company anticipates the expansion program will furnish jobs for 500 men, twice as many workers as are now employed.

Cement Man Elected Lord Mayor of London

Alderman Arthur C. Davis, recently elected lord mayor of London by unanimous acclamation, to succeed Frank Alexander, is an important figure in the British cement industry. Mr. Davis will hold office for one year.



According to data collected by the National Lime Association, 54 companies in July, 1945, shipped 145,277 tons of lime (87,265 quicklime; 58,012 hydrate). Reporting companies represent 43.1 per cent. of the association members' total capacity of record. Based on Pit and Quarry's estimates for the remainder of the industry, the total shipments for the month by all plants were approximately 372,000 tons. Shipments of lime by users for July, 1945, were:

Use	Quicklime (tons)	Hydrate (tons)
Agricultural	649	13,299
Building	6,716	20,441
Chemical	79,900	24,262
Total	87,265	58,012

Newhouse Resigns Allis-Chamlers Post G. V. Woody Succeeds

R. C. Newhouse, former manager of the Allis-Chalmers basic industries department, resigned from this position on November 1. Mr. Newhouse will be succeeded by G. V. Woody, but will be retained as a consulting engineer. He retired after more than 40 years of world renown as engineer, inventor and designer of some of the world's largest cement and mining machinery. He became chief engineer of the crushing and cement department in 1924 and was appointed manager and chief engineer of the company's newly formed basic industries department in 1944.

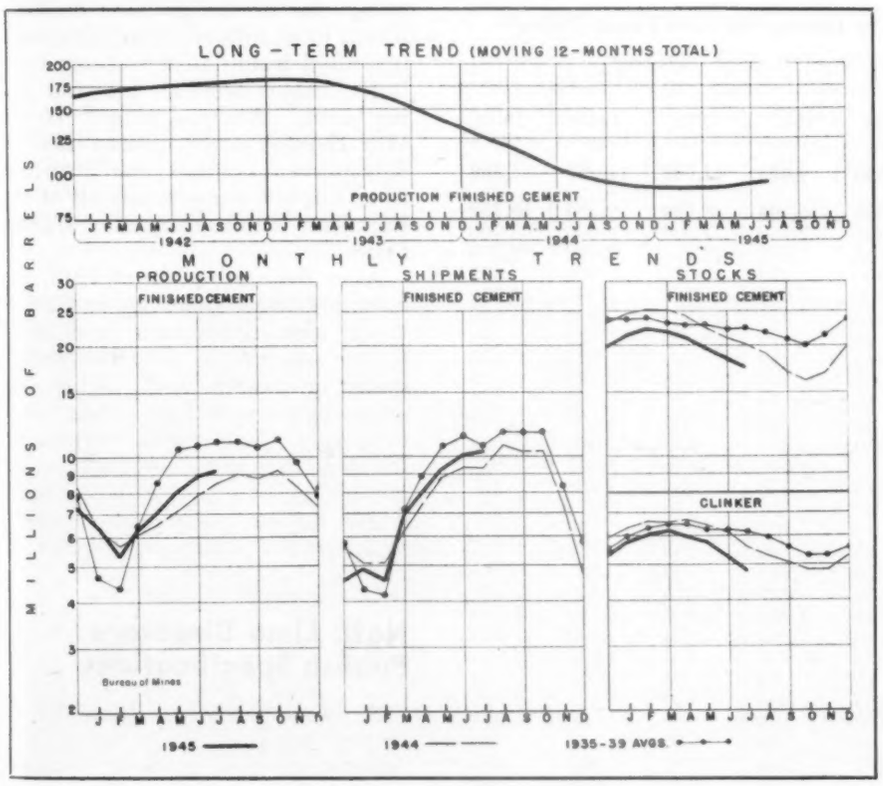
R. C. Newhouse

G. V. Woody

An employee of Allis-Chalmers since 1905, Mr. Newhouse specialized in crushing and mining engineering. He has designed many types of crushers, mills, kilns, coolers and dryers, several of which represent patents in his name. In 1940 he received the "Modern Pioneer" award from the National Association of Manufacturers for his significant contributions to the American standard of living.

Mr. Woody has been manager of the Allis-Chalmers district office at Pittsburgh since 1934, although in 1941 and 1942 he served as administrator of the company's priorities management organization in Milwaukee. He has been with Allis-Chalmers since 1909 after graduating from Rose Polytechnic. He was engineer-in-charge of the centrifugal pump section from 1912 to 1919. He then operated an Allis-Chalmers agency for a year before returning as manager of the Allis-Chalmers Wilkes-Barre office from 1920 to 1926.

Mr. Woody is a member of A.I.M.E., A.I.S.E., and the Engineers Society of Western Pennsylvania, and the Eastern States Blast Furnace and Coke Oven Association.



Production of 9,237,000 barrels of finished Portland cement during July, 1945, as reported to the Bureau of Mines, United States Department of the Interior, was 8 per cent. above that reported for the corresponding month of 1944. Mill shipments of 10,283,000 barrels were 11 per cent. above the output of July, 1944, and 2 per cent. above the June, 1945, total. Mill stocks of finished cement at the end of July totaled 17,489,000 barrels, a decline of 14 per cent. from the stocks of July, 1944. Clinker production for July was 11 per cent. above that of July, 1944, and 5 per cent. above June, 1945. However, this increased production did not meet demands, and stocks decreased 506,000 barrels from the June 30 figure to 4,767,000 barrels on July 31, 1945.

Ahearn Appointed Alternate Delegate To Labor Conference

Vincent P. Ahearn, chairman of the Industry Members of the National War Labor Board, has been appointed by President Truman as an alternate delegate to the Labor-Management Conference which will start in Washington on November 5. This conference has been called "to bring together representative leaders of labor and management in an effort to establish long-term policies which will make possible better labor and management relationships in American industry," said the President in his letter of appointment addressed to Mr. Ahearn. "If this conference is successful," the letter continued, "we will be able to speed up reconversion, and will lay the foundation for what I sincerely hope will be the greatest era of industrial progress in the nation's history."

Vincent P. Ahearn

He has also been asked by the Secretary of Labor to represent employers on the Advisory Committee which will "examine the policies, procedures and organization of the work of the Labor Department in the fields of mediation and voluntary arbitration and will work closely with the new director of the Conciliation Service, Edgar L. Warren, to attain maximum effectiveness."

Mr. Ahearn is executive secretary of the National Sand & Gravel Association, of the National Ready Mixed Concrete Association and of the National Industrial Sand Association.

Building Estimates Released by F.W.A. Research Division

Since V-J Day everybody and his brother have broken out in a rash of speculation and prediction concerning post-war construction activity, and there is a strong suspicion in some quarters that tea leaves, crystal balls and Ouija boards have been employed extensively in making many of the forecasts. It is a distinct relief, therefore, to learn that the Research and Statistics Division, Bureau of Community Facilities of the Federal Works Agency has prepared, presumably without recourse to occultism, estimates of the dollar volume of new construction activity covering the 5-year period from 1946 to 1950.

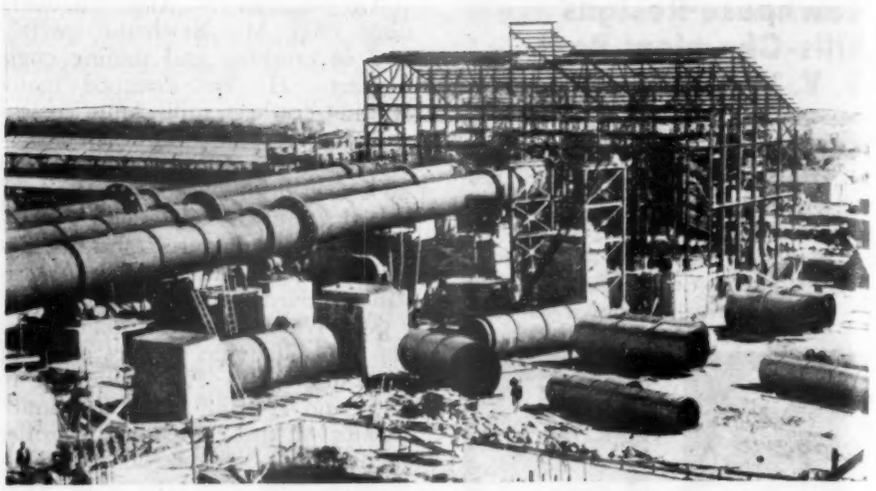
The figures show a fairly uniform rate of increase from a modest level of $6,500,000,000 in 1946 to an impressive total of $15,500,000,000 in 1950, which carries the forecast right into the Buck Rogers era. An encouraging note in the complete tabulation which appears below is that in each of the years covered public construction constitutes not more than 1/3 of the total.

Estimated New Construction Activity During the First Peace Years[1]

(Preliminary—Subject to Revision) (Million Dollars)

	1946	1947	1948	1949	1950
Total	**6,500**	**9,000**	**12,000**	**14,250**	**15,500**
Private	**4,350**	**6,100**	**8,000**	**9,550**	**10,250**
Residential (Nonfarm)	1,525	2,750	3,800	4,600	5,000
Nonresidential Buildings	1,645	1,925	2,275	2,650	2,775
Industrial	950	975	975	950	925
Commercial	450	600	775	1,000	1,000
Other Nonresidential	245	350	525	700	850
Educational	45	70	100	125	150
Social & Recreational	75	110	175	250	300
Hospital & Institutional	65	90	125	150	175
Religious	30	40	75	100	150
Miscellaneous	30	40	50	75	75
Farm	330	375	450	475	500
Public Utilities	850	1,050	1,475	1,825	1,975
Railroads	345	370	400	450	475
Local Transit	35	45	75	75	75
Gas	90	100	125	175	175
Pipelines	55	70	100	150	175
Electric Light & Power	175	245	400	500	575
Telephone & Telegraph	150	220	375	475	500
Public	**2,150**	**2,900**	**4,000**	**4,700**	**5,250**
Residential (Nonfarm)	150	200	250	300	350
Nonresidential Buildings	525	625	825	1,000	1,200
Industrial	75	25	25	25	25
Other Nonresidential	450	600	800	975	1,175
Educational	130	175	300	350	375
Social & Recreational	40	50	50	50	100
Hospital & Institutional	185	250	275	325	375
Administration	45	75	125	175	250
Miscellaneous	50	50	50	75	75
Military and Naval	125	100	50	50	50
Highways	750	1,150	1,750	2,000	2,000
Airports	75	100	150	200	325
Conservation	250	350	450	550	625
Sewer and Water	225	300	425	475	550
Miscellaneous Public Service	50	75	100	125	150

[1] These estimates were prepared after the ending of the war with Japan.



The new Juan Soldado plant while under construction.

Chilean Firm's New Plant Opened at Juan Soldado

Sociedad Cemento "Juan Soldado" S. A. of Juan Soldado, La Serena, Chile, began operating its new cement plant on September 15, according to word from Manuel Agosin, administrator. Mr. Agosin, who was made general manager in charge of construction last year, writes that the plant was formally inaugurated with ceremonies in which President Don Juan A. Rios of Chile participated.

The illustration above shows four Vulcan kilns in process of installation at Sociedad Cemento Juan Sol- feet, 6 inches in diameter by 199 feet, six inches in diameter by 199 feet long, with four tires.

Construction Boom Hits El Salvador

El Salvador, Latin America's smallest republic, is currently undergoing one of the greatest building booms in its history. Concrete, manufactured from native volcanic lava, is the major building material being used. Whereas before World War II most of the cement used by Salvadorean builders was imported from Europe, today nearly all of the shipments come from the United States.

After the earthquake of 1919, the more important buildings in El Salvador were constructed from reinforced concrete by workmen highly skilled in concrete work. All quakes occurring since that time have failed to injure these public structures. Builders anticipate an increasingly greater use of concrete in this area, where lumber is scarce and subject to destructive attacks by insects.

Natl. Lime Directors Publish Specifications

A special committee from the directors' board of the National Lime Association has released industry specifications covering the use of finishing hydrated lime, masons' hydrated lime, plaster, stucco, mortar and lime in concrete. This information is the result of years of research by the association, the National Bureau of Standards, technical institutions and member companies.

Asphalt Gravel Slabs Serve as War Armor On Allied Ships

Among the now-it-can-be-told stories coming out of the recent hostilities is the revelation of the part played by asphalt and gravel slabs which protected British fighting ships from Axis projectiles. Bolted to the walls of vulnerable parts of the ships, the slabs of common road-building material warded off machine-gun bullets and shells or bomb fragments more effectively than light steel. Special plates of the material also were built into bulldozers and flame-throwers used in the Normandy invasion to protect drivers.

Black Hills Keystone Reopens Ingersoll

The Ingersoll mine of the Black Hills Keystone Corporation at Keystone, South Dakota, closed since January, 1945, is again in operation. Shipments of lithium minerals, beryl, mica and feldspar are soon to be resumed.

J. E. Gray Appointed To N.C.S.A. Post

J. E. Gray, employed by the National Crushed Stone Association since 1928 as testing engineer, was appointed on October 16 to the post of field engineer, to succeed E. W. Bauman. He is well acquainted with the results of the association's extensive research investigations and has served effectively in the field.

Mr. Bauman has accepted a position as the executive secretary of the Toncan Culvert Manufacturers Association, with headquarters in Cleveland.

J. E. Gray

A new dewatering plant was recently installed at the McGrath Sand & Gravel Company of Forreston, Illinois, to replace an older unit located farther from the pit. To further facilitate operations, a 20-foot concrete surge silo was built to supplement the dredge.

President Truman (third from right, front row) meets with members of the War Labor Board at the White House on October 15. In the group are: Front (left to right), F. P. Graham, public member; Reconversion Director J. W. Snyder; President Truman; Labor Secretary L. B. Schwellenbach; L. K. Garrison, public member. Rear (left to right), John Leonard, American Federation of Labor member; Vincent P. Ahearn, chairman of the Industry members; Edwin Witte, public member; Neil Brant, Congress of Industrial Organizations member; George Barris, industry member; Clarence Skinner, industry member; L. M. Gill, public member; Early Cannon, industry member; Ray McCall, American Federation of Labor member. Mr. Ahearn is executive secretary of the National Sand and Gravel Association, the National Ready Mixed Concrete Association and the National Industrial Sand Association.

Sen. Murray's Bill Urges Stabilization Of Post-War Building

Senator James E. Murray (D., Montana) on October 2 introduced in the Senate a bill to aid in the stabilization of construction by advance planning of public works, to be called the "Construction Stabilization Act of 1945."

The bill would provide a Construction Policy Board, composed of the Secretary of Agriculture, the Secretary of Labor and the Secretary of Commerce; it also calls for a Public Works Stabilization Committee and a Construction Industry Advisory Committee, both to be appointed by the President. The Board would be instructed to convey to the President and to the Congress each quarter vital information on construction trends. The work of the two committees would be closely articulated with that of the Board.

In addition, the bill would commit the Congress to the obligation of arranging for the construction of public works "so far as practicable in such manner as will assist in the stabilization of construction" and for advance planning. Authorization of an "advance planning fund" of approximately $150,000,000 (from non-Federal sources) also is specified.

Nat'l. Gypsum Company Expansion Under Way

The $8,500,000 post-war expansion program of the National Gypsum Company has already been begun at seven different points, according to an announcement from the office of President M. H. Baker. Construction has started on a $2,000,000 gypsum mill at Baltimore. Among other plants slated for early changes and improvements are the lime mill at Kerns, Virginia, the gypsum mill at Savannah, Georgia, the fiber insulation board plant at Mobile, Alabama, and the gypsum plant at Rotan, Texas.

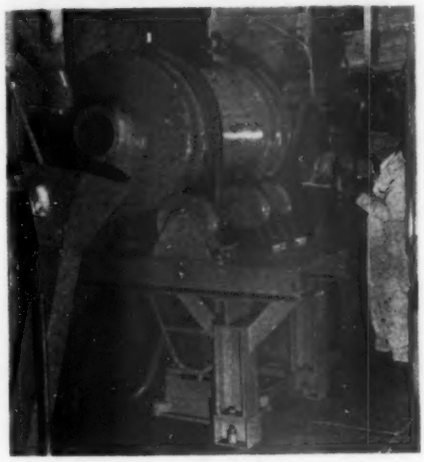
N. Y. and Penna. Stone Assns. Plan Joint Meeting

On November 30 a joint session of the New York State Crushed Stone Association, Inc., and the Pennsylvania Stone Producers Association will be held at the Hotel New Yorker in New York City. Producers from New Jersey and the New England states also are expected to attend. A banquet will follow the business session.

Research Laboratory Developed To Serve the Basic Industries

A newly built Allis-Chalmers research laboratory, said to be the most extensive ever developed for the basic industries, has been practically completed in Milwaukee and is already serving mining, milling and processing interests of the United States and several other countries, according to an announcement by Vice President W. C. Johnson.

In the five-story batch testing section, samples of nonmetallic minerals, bulk synthetics and ores are tested. The ground floor contains storage racks for samples and testing equipment, including variable speed crushing rolls, testing sieves, a special A-C sieve shaker for making screen analyses on coarsely crushed products, a 200,000-pound hydraulic press and a concentrating table. Three 10-ton steel bins feed four crushers on the ground floor, which discharge to a belt conveyor. The latter, in turn, feeds a 54-foot vertical bucket elevator, which discharges through an automatic sampler directly to third-floor bins. Crushing equipment includes a 10-inch by 7-inch Blake jaw crusher, a 322 Type

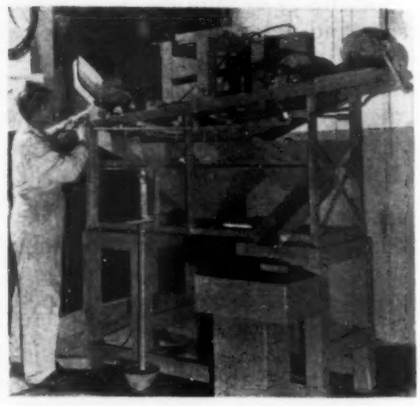


A variable speed rod mill.

R gyratory crusher, 24-inch by 14-inch style B crushing rolls with d.c. variable speed motors, an electronic device permitting variation of the relative roll speeds from even to a maximum ration of 4 to 1, and an A-C Number 1 Pulverator.

A 2-ton bin filled from the crushing section elevator feeds the grinding and concentration test equipment, and a variable-speed belt feeder under the bin supplies the grinding mill. For wet or dry grinding, a blade mill and ball-and-rod mills are provided. The discharge is taken to an automatic sampler on the third floor by a 40-foot vertical bucket elevator. Also on the ground floor is a furnace room containing electric and gas-fired furnaces.

Grinding tests are continually adding to tabulated information accumulated in more than 30 years of testing in this field; varied concentration tests — including flotation, cyanidation, jig concentration, blanket table tests, lixiviation, filtration, washing and thickening — are constantly in process; and investigations for screen grinding and



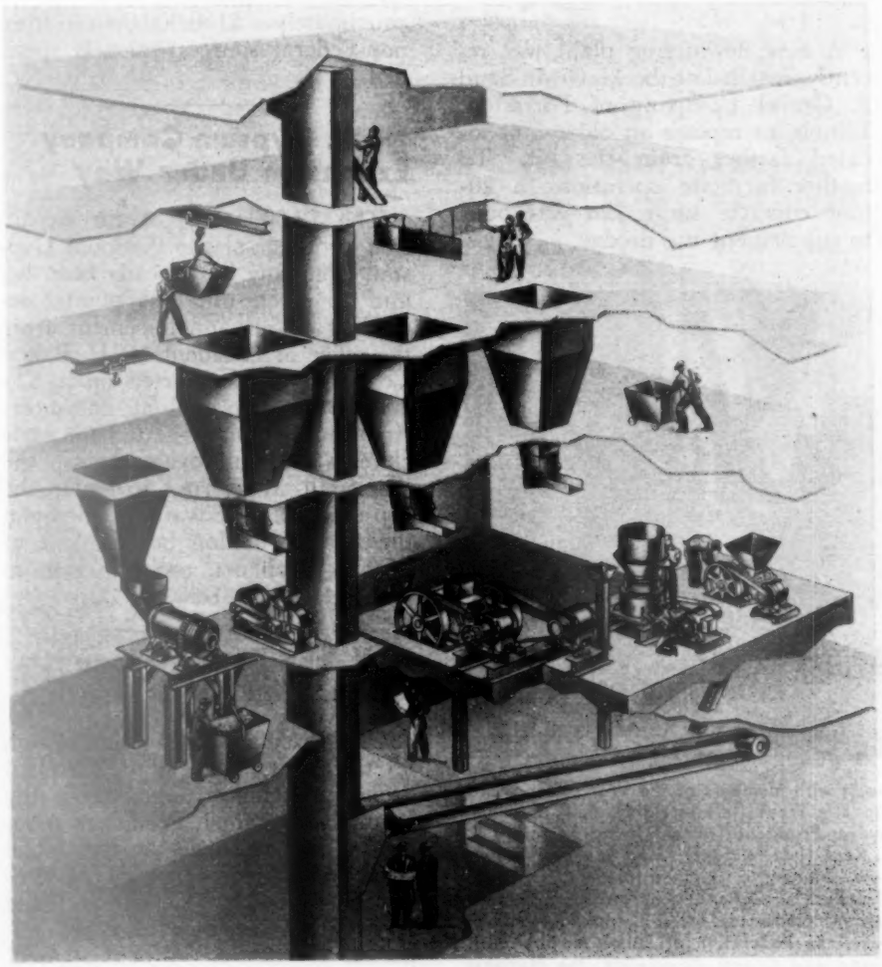
The portable wet magnetic separator.

efficiency are conducted on a continuous screen testing unit arranged to handle 50-or 100-pound samples.

Designed to test samples ranging from 500 pounds up to 10 tons, the four-story pilot mill will treat samples as large as car lots by repeated charging of the bins.

The mezzanine floor contains batch crushing equipment, including a sample pulverizer, laboratory jaw crusher, a.c. laboratory gyratory crusher, an Allis-Chalmers style B sample grinder, a 36-square-inch fixed sieve jig, a hydraulic classifier, a special heavy density A-C designed separation unit and a variable speed rod mill. The last-named unit is so arranged that it can be used for batch testing or for continuous wet or dry grinding.

The second floor houses the grinding testing section, with several ball mills, jar mills, pebble mills, a blade



Cut-away view of the five-story pilot plant.

mill, and two sieve shakers for screen analyses.

On the third floor of the mill are the microscope installations, rock-cutting and polishing equipment, a magnetic tube tester, a centrifuge, an electric oven, the balance room, reagents, fume hood, and many other types of testing materials and devices.

The fourth floor is the batch concentration section, where flotation and cyanidation tests are conducted. Included in the equipment are flotation reagents, flotation test cells, and a vacuum filter and pump.

The fifth floor is the section devoted to analyses of fine-particle sizes and to cement physical testing, for which an infrasizer, an air analyzer, two tensile strength testers, a humid closet and an autoclave are used.

A 30-foot-long, 31-inch-diameter rotary kiln now under construction will supplement a flat hearth roaster already in operation in the pyro-processing section. Here kiln tests will be made with drying, roasting, sintering, agglomeration, calcination processes and the manufacture of Portland cement.

The 14-cell flotation circuit on the ground floor is so arranged that thickened feed can be treated continuously by two-mineral flotation with two stages of conditioning.

The batch and pilot mill sections together constitute a testing service in which practically all known processes of treatment can be tried out, for the eventual purpose of eliminating the "guess factor" from recommendations to industry.

Asbestos Corp., Ltd. Builds Plant Clinic

A modern medical clinic building and residence for doctors, costing approximately $45,000, is to be erected in Thetford Mines, Quebec, for the Asbestos Corporation, Ltd.

J. R. Hill Heads Staff of Reorganized Firm

The Potts-Moore Gravel Company of Waco, Texas, has announced a change in management, effective October 1, 1945. Robert J. Potts, W. H. Prentice and C. W. Crisler, former owners of the firm, have retired and have informed patrons that the following persons now are in charge: J. Rutledge Hill, president; F. R. Gifford, vice-president; H. M. Lacy, vice-president; Burt J. Collins, general manager; R. E. Wynne, secretary-treasurer; and J. D. Nokeley, office manager.

J. Rutledge Hill

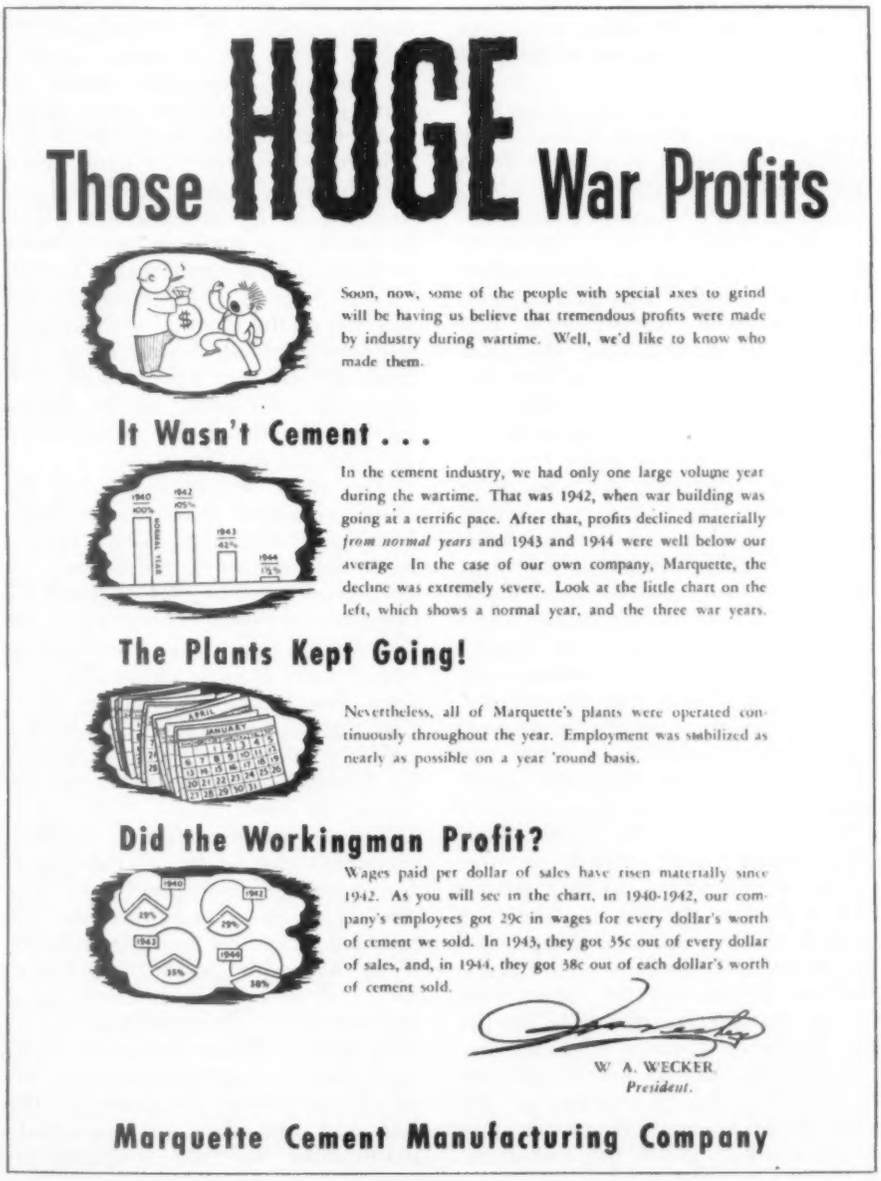
Mr. Hill, a former president of the National Sand and Gravel Association, is the president of Gifford-Hill & Company, Inc., of Dallas.

Marquette Editorial A Timely Message On War Profits

In one of the first and most telling editorial ads to appear since the onset of the post-war strike epidemic, the question of huge war profits was brought out into print in an advertisement published by the Marquette Cement Manufacturing Company of Chicago. (See illustration.)

The ad was written by W. A. Wecker, president of the company.

Despite his company's unique position of having had no labor troubles since 1916, Mr. Wecker was cognizant of the particular need for sound thinking on this subject. The ad appeared in Missouri, Tennessee, Iowa and Illinois newspapers.


Those HUGE War Profits
Soon, now, some of the people with special axes to grind will be having us believe that tremendous profits were made by industry during wartime. Well, we'd like to know who made them.
It Wasn't Cement . . .
In the cement industry, we had only one large volume year during the wartime. That was 1942, when war building was going at a terrific pace. After that, profits declined materially from normal years and 1943 and 1944 were well below our average. In the case of our own company, Marquette, the decline was extremely severe. Look at the little chart on the left, which shows a normal year, and the three war years.
The Plants Kept Going!
Nevertheless, all of Marquette's plants were operated continuously throughout the year. Employment was stabilized as nearly as possible on a year 'round basis.
Did the Workingman Profit?
Wages paid per dollar of sales have risen materially since 1942. As you will see in the chart, in 1940-1942, our company's employees got 29c in wages for every dollar's worth of cement we sold. In 1943, they got 35c out of every dollar of sales, and, in 1944, they got 38c out of each dollar's worth of cement sold.
W. A. WECKER
President.
Marquette Cement Manufacturing Company

WASHINGTON NEWS LETTER

TROUBLES in the field of international politics caught the capital spotlight this past month, and will probably hold it for some time. No amount of optimistic double-talk can conceal the inglorious failure of the London Conference—the first meeting of the foreign ministers called for in the Potsdam declaration. A direct clue to the most important reason for this failure, at least from the standpoint of American participation, may be found in recent debates concerning United States policy for the control of atomic energy, which have brought out the extensive ramifications of this problem.

If ever a broad understanding and a high-minded, statesmanlike approach were required of the executive and legislative branches of the government in order to protect and promote the welfare of the people, the problem of what to do with our still-elemental knowledge of atomic power should bring these qualities forward. It is clear from the reports and statements which have been made by most of the scientists responsible for the discoveries that the constructive potentialities of atomic might are equalled only by its power for destruction. The unfortunate truth is that the decisions that have been made thus far, tentative though they are, indicate a remarkable lack of appreciation of the facts of atomic life. On the one hand, the same scientists who successfully evolved the atom-splitting methods and discovered the "chain reaction" which is the crux of the process, assert categorically that the secret of the atom bomb cannot remain the exclusive knowledge of the discovering nations, and that even if what is thus far a secret were to be kept completely to ourselves, other scientists in other nations could cover the very same ground in a few short years.

Is it reasonable to expect that other nations will permit us the exclusive control of atomic power and will not attempt to find the process or even improve the process for themselves? In view of the practical certainty that the secret can not be kept, it is difficult to justify the President's recent off-hand announcement that the secret will not be shared, unless the temporary advantage which we gain in this way is sufficient to offset the suspicions which this attitude is bound to breed. Avowedly, the primary purpose of United States international policy is the maintenance of world peace but it should be obvious that it will be difficult enough to attain the degree of international understanding necessary to peace without having to overcome additional problems of distrust and suspicion. The scientists apparently appreciate this fundamental contradiction between our stated ideals and our actions to date a great deal more keenly than any other group, and the leading technicians in each of the atomic projects have made the strongest representations to the Congress urging international control over all phases of atomic technology.

This is not the only issue in which we have exhibited what has been called a divided conscience and a double standard of international morality. Our use of power politics to dominate occupation policy toward Japan and to acquire exclusive control of strategic bases in the Pacific only weakens our hand when we attempt to influence political settlements in Eastern Europe. This is not to say that we are entirely to blame for the remarkable lack of success which distinguished the meeting of the Council of Ministers, but the United States delegation certainly did not cover itself with glory, and succeeded only in playing into the hands of the anti-Russian alarmists in this country.

The most serious aspect of the atomic business is that the President's announcement, which admittedly was simply a reflection of a vociferous segment of Congressional opinion in both houses, was not based upon the international consultation or even the careful consideration at home which the situation warrants, and now that he has publicly committed himself it will be doubly difficult to reach an objective decision.

This is just the kind of problem on which the advice of the armed forces is notoriously unreliable. The services are concerned primarily with military questions and secondarily, if at all, with political problems. Even where military interests alone are concerned, their position appears very shaky. It has become a commonplace that the generals and admirals are always preparing for the last war, and they are apparently maintaining the old tradition intact. Their usual panacea of a large army, navy, and air force may be well designed to meet the military problems of World War II, but it is already behind the times. Even to the unimaginative, the atomic explosions in Japan were the overture to a new Atomic Age, but the implications for military science are still only dimly appreciated by the military services themselves. With the scientists unanimous in their belief that no effective defense can be developed against the atom bomb, the military can not dispute the position of the acknowledged experts. But, since the recommendation of the latter for international coöperation in atomic development as the only intelligent course open to us might have the effect of reducing our relative military strength, it is considered too "dangerous" to accept, despite the fact that the military cure-all will not, on the face of it, provide the defense which would be its only justification. This is the same sort of spiral thinking which led General Patton recently to predict the inevitability of another world war. No one doubts that another war—monstrous and destructive beyond any present conception—is indeed inevitable if we prove too timid, too complacent, too stupid to prevent it. It certainly would be a profound tragedy if the civilization which was able to produce the scientific miracle of atomic energy found itself unable to control it. But only the hopelessly myopic would revert at this stage of the game to international power politics backed up by military preparedness.

It has become clear in the last few weeks that in reaching a decision on atomic power, we are also deciding the extent of our own seriousness and sincerity in advocating international coöperation as the road to world peace. Although the appointment of a special Congressional committee to inquire into the problem and to recommend a policy for the control of atomic energy serves to reopen the whole question, and all interested groups are to be given a further chance to testify, the policy keynote which has already been sounded is bound to predominate unless public opinion becomes much more aware, and its pressure much greater and much more outspoken, than heretofore.

the VICTORY *Program*

. . . . . AND YOUR BUSINESS

BUILDING-MATERIAL PRICE ADJUSTMENTS.—Producers of brick, sand, gravel, crushed stone, refractories, asphalt and asphalt products, gypsum and gypsum products and allied construction materials and refractories with gross annual sales of $1,000,000 or less hereafter may make application for adjustments in ceiling prices to regional offices of the Office of Price Administration, the price agency announced October 31. Previously manufacturers with gross annual sales of $200,000 and over were required to apply to the O.P.A. national office in Washington for price adjustments. This action is in line with over-all O.P.A. policy to transfer pricing actions, where possible, to its field offices to permit faster processing. The action becomes effective November 5, 1945.

The O.P.A. also announced a liberalization of price-adjustment provisions for brick, sand, gravel and allied construction materials and refractories. Under the new liberalized provisions, which are the same as were provided September 15, 1945, for producers under many other O.P.A. regulations, manufacturers of brick and other construction materials and refractories may apply to the O.P.A. for price adjustments when their over-all operations have been conducted at a loss, regardless of whether their production is essential or low-priced. Before this action a manufacturer of construction materials and refractories could apply for a price adjustment only if his supply of the commodity could not be replaced if he discontinued production, or his supply could be replaced only at a price equal to or higher than the adjusted maximum price.

(Amendment No. 1 to Maximum Price Regulation No. 592—Specified Construction Materials and Refractories—effective November 5, 1945.)

LIME RESALE PRICES.—Jobbers and dealers purchasing lime from manufacturers who have had their ceiling prices increased were authorized by the Office of Price Administration on October 4 to pass on the increases in carload lot sales to industrial plants, water companies, city sewerage plants and other dealers where the seller's profit margin is $1 or less per ton. The increases may be passed on in sales of building, chemical and industrial lime, excluding agricultural lime.

(Amendment No. 10 Order to No. 1 under Section 25 of Maximum Price Regulation No. 592—Specified Construction Materials and Refractories—effective October 4, 1945.)

PHOSPHATE ROCK PRICES.—An increase of 20 cents a ton in the ceiling for sales of all grades of Tennessee phosphate rock by producers to fertilizer manufacturers was announced by the Office of Price Administration October 10. As manufacturers will be required to absorb the increase, the price of fertilizer to the farmer not affected.

This increase, effective October 15, 1945, amounts to the approximate cost to the industry of a recent increase in wages for labor engaged in mining and processing Tennessee phosphate rock. The wage increase was ordered by the War Labor Board. The amount of the increase is considered the minimum requirement to keep all essential producers in operation. Phosphate rock is essential for the manufacture of fertilizer needed to meet food production goals set by the Department of Agriculture.

Two changes affecting only producers of Florida pebble phosphate rock are also included in this amendment. They are:

(1) The same adjustments that have been customary to provide for excess amounts of iron oxide, alumina and moisture in Tennessee phosphate rock are also provided for Florida pebble phosphate rock.

(2) The same addition of 40 cents a net ton for bagging in valve bags provided by the buyer will be permitted producers of Florida pebble phosphate rock that has been allowed buyers of Tennessee phosphate rock.

(Amendment No. 4 to Revised Maximum Price Regulation 240—Phosphate Rock—effective October 15, 1945.)

PRIORITIES AVAILABLE TO MINING INDUSTRY.—In a letter written October 10 by Fred M. Chace, Chief, Non-Metallics Section, War Production Board, to Vincent P. Ahearn, executive secretary of the National Industrial Sand Association, he outlined several important points which now affect the operation of non-metallic mines. Mr. Chace's letter is reproduced here with slight abbreviation because of its interest to the entire non-metallic-mining field:

1. *Revocation of P-56.*—According to Priorities Regulation 31, as amended October 1, 1945, WPB Order P-56 was revoked on September 30, 1945. Therefore, nonmetallic-mining enterprises are no longer subject to its provisions and restrictions, but rather are now subject to the general orders of the War Production Board which still remain in effect. Notice of the revocation of P-56 has been sent to holders of serial numbers.

2. *Keeping of Records.*—It is no longer necessary to keep records of any type for the purpose of fulfilling the requirements of P-56. However, if any other War Production Board order, applicable to individual operators or materials, requires that records be kept, then that order must be stictly followed. It would be well to preserve past records for a period of not less than two years, as was required by paragraph (h) of P-56.

3. *Inventory Restrictions.*—PR 32, as amended October 1, 1945, sets forth the inventory rules and restrictions under which all business enterprises are now to operate. The purpose of this order is to prevent excessive inventories by restricting orders, deliveries, receipts, and processing of materials in short supply. All kinds of materials are included in the restrictions, both fabricated and unfabricated. The restrictions of PR 32 are no greater than those under which you have heretofore operated while under P-56.

4. *CC Ratings.*—PR 28 outlines the conditions under which the new CC rating will be assigned. It is the general policy of the War Production Board not to grant further priorities assistance for non-military purposes. However, in certain limited cases CC preference ratings are to be granted for specific items and quantities of material or equipment under the following conditions:

(1) The applicant is not able, without preference-rating assistance to get the item in the minimum quantity and on the latest date practicable.

(2) The item is required to break a bottleneck; to prevent a delay in the completion of certain production or construction items; the item is needed in certain emergency conditions; and certain other specified circumstances set forth in PR 28.

Applications should be made on WPB-541-A to the nearest field office of the War Production Board. Applications for less than $5,000 are processed in the field; those for over $5,000 are sent by the Field Office to the end-product division of the War Production Board in Washington. If any unusual problem arises concerning the CC ratings or dealing with the Field Office, I suggest that the operator consult the Non-Metallics Section, Mining Division, War Production Board, in Washington.

5. *AAA Ratings.* These ratings will continue to be issued in emergency conditions, for breakdowns or imminent breakdowns, as in the past. Communicate directly with F. M. Chace in Washington when a breakdown occurs or an AAA rating is necessary.

RIP-RAP SUSPENDED FROM PRICE CONTROL.—In a letter of October 12, addressed by W. S. Ingram, Price Executive, Building Materials Price Branch, Office of Price Administration, to J. R. Boyd, administrative director of the National Crushed Stone Association, Mr. Ingram said in part: ". . . the Statement of Considerations accompanying Supplementary Order No. 129 . . . describes the type of stone which is suspended from price control, namely, all types of essential stone that is quarried, cut and shaped to specified dimensions or patterns used principally for the construction of masonry walls and memorials. Since rip-rap is a type of stone which is quarried and primarily shaped for use in breaker or retainer walls, it is the opinion of this Office that rip-rap is included in the commodities listed in Supplementary Order No. 129, and is suspended from price control."

W. L. B.'s TERMINATION PROGRAM.—The following statement (reproduced in abridged form) was adopted unanimously October 16 by the National War Labor Board:

On September 26, 1945 the National War Labor Board, in accordance with the program previously announced for winding up its work, unanimously voted to fix a definite date for the termination of the board's existence. December 15, 1945, was agreed upon as the date, subject to a final checkup as to the condition of the board's backlog in the various regions and in the Industry Commissions and Panels. On October 3, 1945, after conferences with the Chairmen of the Regional War Labor Boards, the board unanimously voted to terminate its existence not later than January 1, 1946, and to make every effort to achieve that result by December 15, 1945. . . .

The board is now in a position to announce the following procedural steps, which are designed to facilitate the task of winding up the board's operations within the time previously agreed upon.

1. Effective from and after October 22, 1945, except in pending appeal cases and in pending cases in which the parties have jointly stipulated to be bound by the board's decision, no further directive orders will be issued by the National War Labor Board or by the Regional Boards or Industry Commissions, (other than the commissions which have been set up to effectuate directive orders of the board). Instead recommendations to the parties as to the appropriate terms of settlement will be issued.

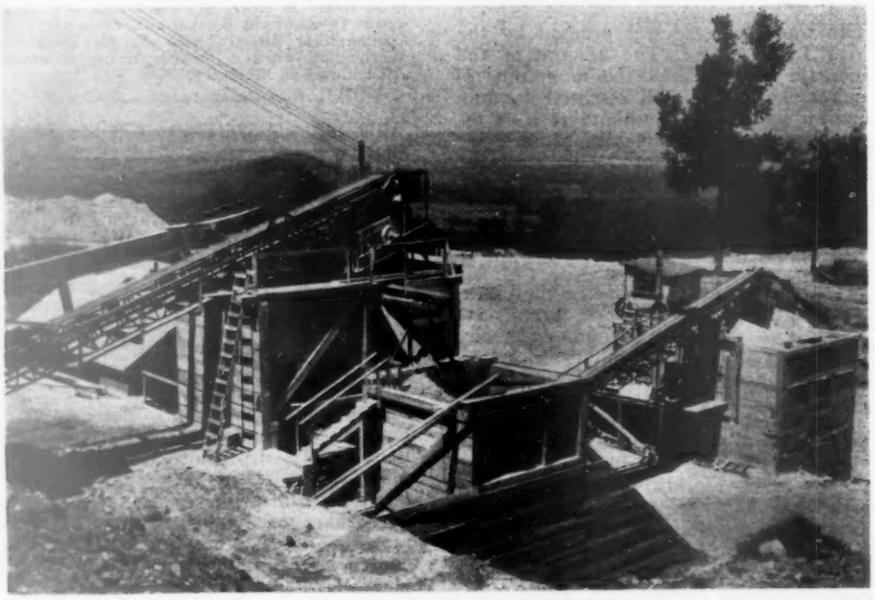
2. No appeals from the recommendations of the Regional Boards and Commissions to the National War Labor Board will be permitted. Appeals from directive orders which have already been issued by the Regional Boards and Commissions will, however, be processed by the National War Labor Board as heretofore and will be disposed of by directive order.

3. In cases in which the parties have heretofore jointly stipulated to be bound by the board's decision, the board and its respective agencies will issue directive orders as heretofore. Appeals in such cases will be permitted as heretofore to the National War Labor Board where the case has been referred to a Regional Board and the parties have not agreed that the Regional Board's decision should be final.

4. The board's policy has been to make decisions only in dispute cases certified prior to August 18, 1945, except where the parties jointly stipulated to be bound by the board's decision. This policy will continue to be followed, with the added proviso, however, that as to joint stipulations received by the board on and after October 22, 1945, and until a date to be later

(*Continued on page* 102)

Neuheisel Completing Extensive New Plant and Improvement Program



General view of the Durand plant of the Neuheisel Lime Works. Screen, main conveyor and pulverizer building are at left.

another ON THE SPOT report

THE tremendous increase in the demand for agricultural limestone in the last ten years has brought many new producers into the field. Some of them started small and have stayed small. Others, like Norbert A. Neuheisel, have grown with the industry. Born and raised on a Wisconsin farm, he left it in 1936 at the age of 22 to start his own agstone business, the Neuheisel Lime Works of Eau Claire. The first unpretentious plant had a No. 14 Gilson pulverizer. W. P. A. labor was for a time used in the quarry but soon gave way to regular employees. This plant was moved to different locations in a limited area of west central Wisconsin.

In 1940 Mr. Neuheisel built his first stationary agstone plant at Mondovi, 23 miles southwest of Eau Claire in Buffalo County, Wisconsin, at a quarry he had used at intervals since 1937. In October 1941 he took over a plant at Durand, 33 miles southwest of Eau Claire in Pepin County, and in August 1942 another at Arcadia, 50 miles south of Eau Claire in Trempealeau County. With all three plants in full operation he lost no time in planning and executing an improvement and expansion program in which each plant paid its own way. The Mondovi plant was rebuilt in 1943 and its 200-ton-daily capacity of agstone was increased to 600 tons of agstone and 250 tons of crushed road stone. More than 700,000 tons of stone have been removed from this quarry. The rebuilding of the Durand plant, completed in 1944, increased its daily capacity from 180 tons of agstone to 400 tons

BY WALTER E. TRAUFFER

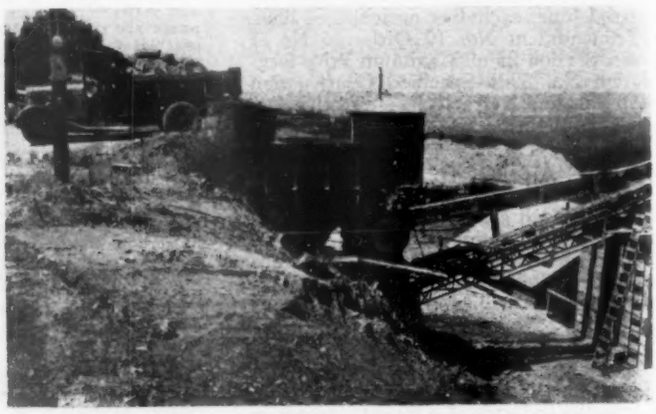
of agstone and 250 cu. yd. of rock. The Arcadia plant now has a daily capacity of 300 tons of agstone and 150 cu. yd. of road stone. The new plant on order is a Diamond Iron Works portable plant with a 24- by 36-inch primary crusher and will

Norbert Neuheisel

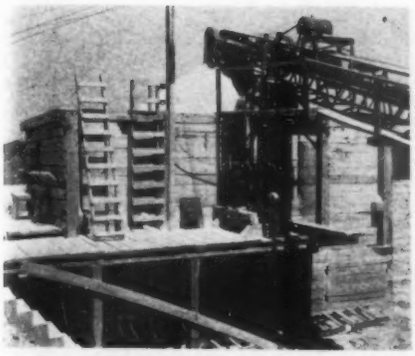
have a daily capacity of 500 tons of agstone and 250 cu. yd. of crushed stone.

The portable plant will be moved in and out of this quarry as desired and can be used to supplement the two stationary plants or to reach

Scene at the Durand plant—tractor and scraper removing overburden, with booster tractor in rear.



Another view of the Durand plant, showing truck, primary jaw crusher and conveyors.

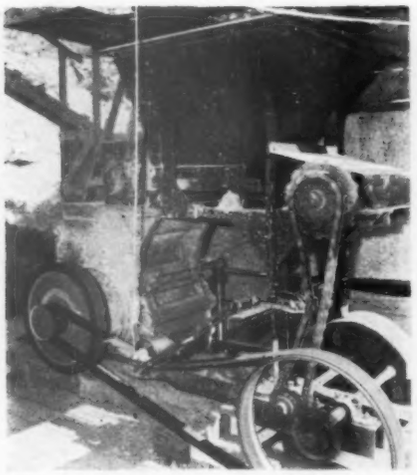


Conveyor to final storage bin, with gasoline engine below. (Durand)

areas out of their shipping range. The emphasis on road stone in these new plants reflects Mr. Neuheisel's aversion to having all his eggs in one basket and his realization that the post-war period might bring a lower demand for agstone along with the certain increase in the demand for road stone. In 1944 the combined output of these plants was 267,000 tons of agstone and 30,000 cu. yd. of road stone. In 1945 the volume will be over 300,000 tons of agstone and over 80,000 cu. yd. of road stone. An even greater percentage of road stone will probably be produced in 1946.

Mr. Neuheisel holds A.A.A. contracts for over 300,000 tons of agstone for eight counties, Eau Claire, Buffalo, Pepin, Dunn, Trempealeau, Jackson, Clark, Barrow and Chippewa, all rich farming country. He owns 30 quarry and delivery trucks and has more on order but does no spreading of the agstone. He owns 12 spreaders, mostly Paramount, and rents these out to farmers. For repair and maintenance work at all three plants a P & H portable gasoline-engine-driven electric welder is used. This is towed behind a car.

Like most others in this area the dolomitic limestone deposits at these plants is a cap rock on top of the highest hills. According to Mr. Neu-



Pulverizer with sliding bin gate and reciprocating plate feeder. (Durand)

heisel it has from 98 to 103½ per cent. neutralizing value or $CaCO_3$ equivalent. It is ground to a fineness of about 86 per cent. through 8 mesh, 50 per cent. through 60 mesh, and 45 per cent. through 100 mesh.

The Durand plant, rebuilding of which was completed late in 1944, was inspected by the writer while the changes were under way and again a few months ago when operations were in full swing. In this essentially new plant Mr. Neuheisel makes evident his confidence in the future of the agstone industry as he spared no reasonable expense or effort to make this one of the best plants of its kind the writer has seen. The foundations, the footings, the retaining wall at the primary crusher, and the main engine building are all reinforced concrete. The bins, columns, conveyor bents, etc., are all heavy timber construction. The entire plant was built by the Hoeppner & Bartlett Company, contractors of Eau Claire, who also set all the machinery.

The quarry has a 35-foot-maximum face with 18 feet more of good limestone between the quarry floor

Traveling grizzly feeder over the jaw crusher. (Durand)

and the sandstone underlying this deposit. The overburden averages four feet in depth. This was recently removed many months ahead of the quarrying. About 225,000 tons were removed by a LeTourneau 12-cu. yd. Carryall scraper drawn by a Caterpillar RD8 tractor and another RD8 equipped with a LeTourneau bulldozer.

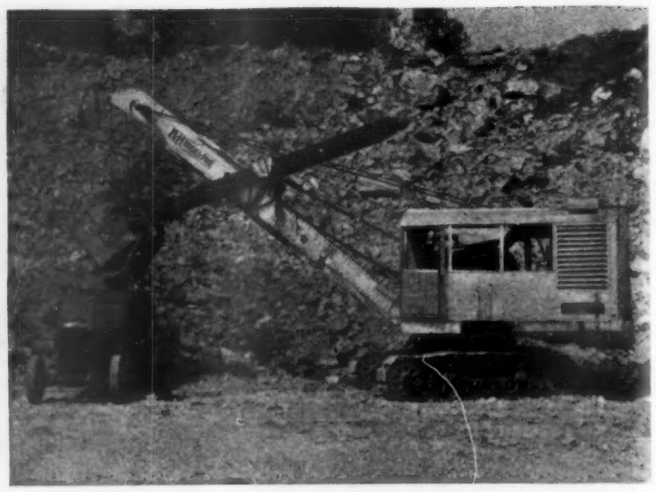
Independent Pneumatic Thor jackhammers supported on planks are used to drill blast holes horizontally into the face. An Ingersoll-Rand wagon drill is also used. Air is supplied by a Le Roi Rix truck-mounted portable compressor. The stone is loaded by a ⅝-cu. yd. Northwest gasoline shovel into two 3-cu. yd. trucks—a Dodge and a Diamond T. These haul the stone upgrade from the quarry to the primary crusher at the top of the quarry face. The plant is in the quarry and the truck-loading bins load trucks on the quarry floor.

The stone is discharged from the trucks on a Pioneer traveling grizzly feeder with 2½-inch openings. The oversize rock goes to an 18- by 36-inch Universal jaw crusher which reduces it to 2½-inch-minus. The grizzly throughs and the crushed stone are carried on a 24-inch by 55-foot Pioneer belt-conveyor to a 3- by 8-foot Pioneer 2-deck screen. This

Diesel engine, with pulverizer in background, Durand plant.

Shovel loading overburden from the floor of the Mondovi quarry.

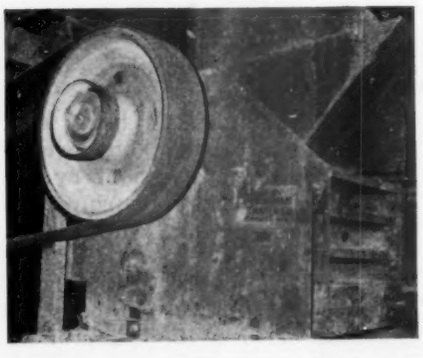
View of Mondovi plant, showing chutes to stock-piles and agstone loading bin.



The 1¾-cu. yd. gasoline shovel loading rock into one of the trucks at the Mondovi quarry.

The hammermills and their reciprocating plate feeders. (Mondovi)

Truck body used as a primary crusher feeder at Mondovi.



The primary jaw crusher at the Mondovi plant.

Engines which drive two of the three pulverizers. (Mondovi)

does all the sizing and is usually equipped with 1-inch and ¼-inch wire cloth on its top and bottom decks, respectively. When the entire output of the plant is concentrated on agstone the top deck of the screen is blanked off and all material over the bottom deck goes to the hammermill.

The road rock off the bottom deck of the screen is carried on a short Pioneer belt-conveyor to one of the two 80-ton compartments of the truck-loading bin.

Ordinarily the rock off the top deck of the screen drops into a small bin from which a reciprocating plate feeder discharges it into the No. 22 Gilson hammermill. The fine material through the bottom deck of the screen drops through a pipe and joins the hammer-mill product on a 24-inch by 75-foot Pioneer belt-conveyor to the other 80-ton bin compartment.

A Caterpillar D-4600 engine drives the primary crusher and its feeder, the first conveyor, and the screen. The hammer-mill and its feeder are driven by a 150-hp. Buda Diesel engine. The final conveyor is driven by a 12-hp. Wisconsin gasoline engine. Goodrich conveyor belting is used throughout. A 30-ton Toledo truck scale is now being installed at this plant to weigh truck shipments.

The Mondovi plant is one of the most interesting the writer has seen. The deposit, like most others in this area, is a cap rock on top of the highest hills. At this location, however, this rock is too high above the access road from the highway for trucks to haul from a plant near this level. Instead the plant was built on the side of the hill below the quarry level and the finished products are chuted to bins or piles at road level, far below the quarry level.

The deposit is covered by a 20-foot layer of clay which is removed by a ½-cu. yd. Insley shovel and an International tractor with a Bucyrus-Erie bulldozer. The quarry face has a maximum height of 60 feet. A combination of vertical wagon drill holes and snake-holes is used as conditions require. The Ingersoll-Rand wagon drill uses 2¾-inch steel and detachable bits. Air for the drill is supplied by a 315-c.f.m. Ingersoll-Rand portable compressor driven by a Waukesha-Hesselman engine. Hercules 60 per cent, explosive is detonated electrically. A P & H Model 700 gasoline shovel with a 1¾-cu. yd. dipper loads the stone into three trucks which haul it about 1,000 feet to the plant. There the stone is dumped into an old 5-cu. yd. hydraulically-operated dump truck body which serves as a feeder to the 18- by 36-inch Eagle primary jaw crusher. The minus-3-inch stone from the crusher is carried on a Continental belt-conveyor to a 5- by 12-foot Telsmith 3-deck vibrating screen. Only two decks are used.

The large rock off the top deck of the screen drops into the pulverizer feed bin which is concrete and has a capacity of 250 tons. Three

(*Continued on page* 81)

Cement Manufacturing A Flourishing Industry In Chile

By RAUL DESCALZI, E. E.
Former Assistant Head
Engineering Dept.

Raul Descalzi

another P and Q exclusive

THE rapid development of Chile's construction program of roads and buildings has compelled El Melon Mill Works, a dry-process cement manufacturing plant and the only one in the country in actual production so far, to increase once more its manufacturing capacity. At the same time that the partially-Government-owned Juan Soldado cement plant in the northern part of the country is finishing the installation of its equipment, El Melon Mill is setting up two new kilns to help out the precarious cement situation in that country.

As far back as 1939 El Melon was supplying nearly the whole needs of the country but when the great earthquake of Chile shook the south part of the country and the Chilean Government started the reconstruction of the damaged zone through the Reconstruction and Auxiliary Corporation with an increase at the same time of building construction in Santiago, the capital, and other cities, the cement situation in the country became very acute.

By that date El Melon Mill had already ordered new equipment in the United States through F. L. Smidth, but the war broke out and the orders were cancelled. As a transitory solution the Chilean Government imported certain amounts of cement.

As early as the 1900's Chile was exclusively a cement importer depending on the European and American producers. Chilean industrialists, looking forward to the development of the country and the importance of cement manufacturing, decided to start their own production. In 1906, with Chilean capital and the help of Danish engineers, the totally steam-operated El Melon plant got started at La Calera, a small village on the main railroad line between Santiago and the main port of the country, Valparaiso.

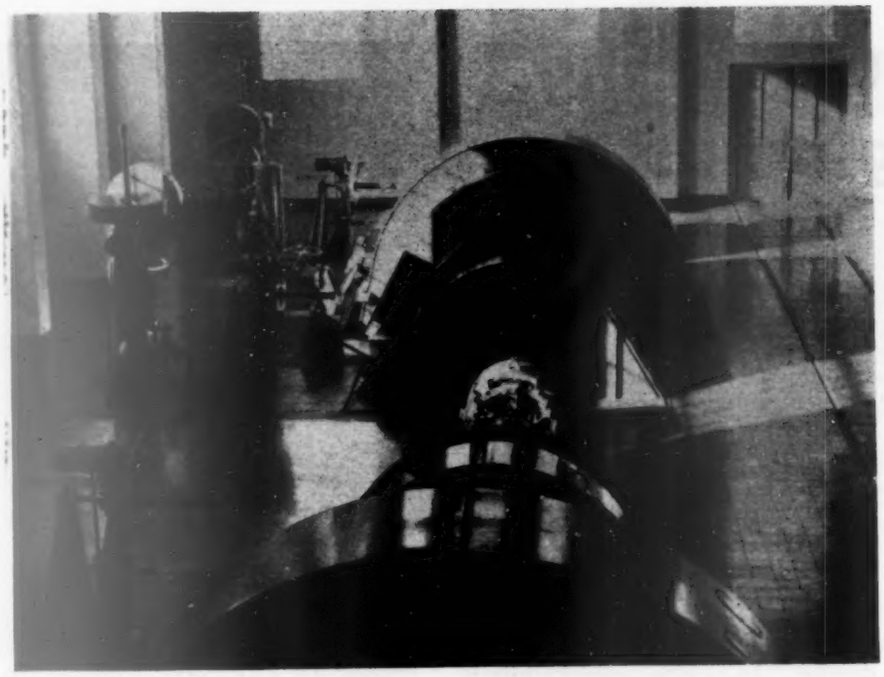
The plant has gone through different expansions from its very beginning, keeping step with the development of the country and its cement needs, starting with two 7-by 70-foot kilns with a capacity of 70 metric tons (410 bbl.) per day. The output of the plant was increased in 1924 to 350 tons (3,051 bbl.) per day with 5 F. L. Smidth kilns and complementary equipment and at the same time the plant was changed over from steam to electric operation.

The plant went through further expansions in 1926 and 1936. On this first date the output was increased by 720 metric tons (4,219 bbl.) per day with the installation of three new 10- by 170-foot Traylor rotary kilns and by 480 metric tons (2,813 bbl.) per day on the second date with the addition of two 10- by 240-foot Smidth. On both dates new mills and complementary equipment were also installed.

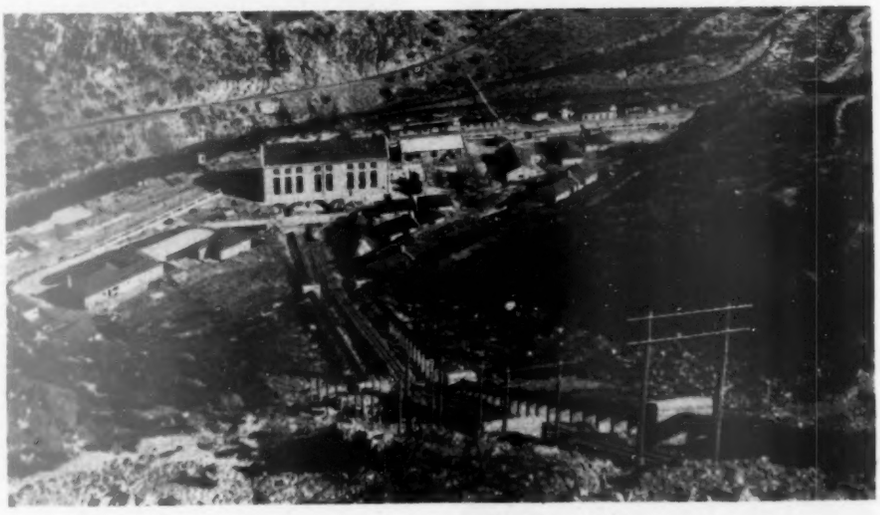
At the present date a fourth expansion is under way at full speed and in the period 1944-1945 two Vulcan kilns bought in the United States through the Corporacion de Fomento de la Produción and rebuilt in Chile will bring El Melon output up to 10,000 barrels a day, e.i., 12,000,000 bags a year.

The mill is located almost in the center of the cement consumption of the country and though it is near its rock deposits the coal supplies are brought 500 miles from its partially-

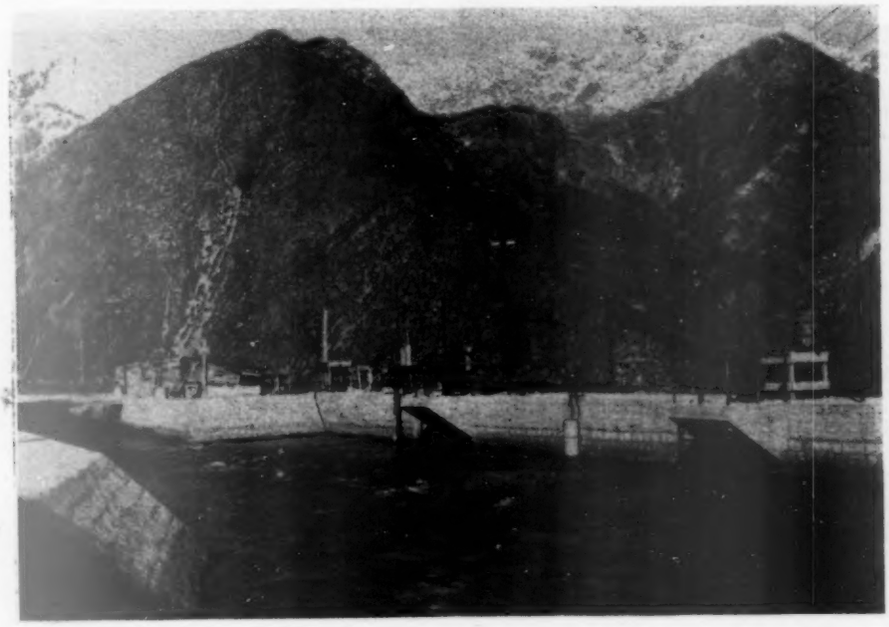
Aerial view of El Melon plant at La Calera, Chile, showing raw material and clinker storage building at left and cement storage silos at right.



Turbine-house at Los Quilos, showing the two 10,000-horsepower units.



Hydro-electric power plant at Los Quilos in the Andean Mountains.



Storage tank at the power-house. In the background, the Andes.

owned coal deposits at Lirquen. Ship connections between these deposits and Valparaiso and railroad connections from there to the mill make the coal transportation fairly easy. As the total coal needs cannot be supplied from the Lirquen deposits, a certain amount of coal is supplied from other Chilean coal mines near the neighborhood of Lirquen.

Rock Deposits The plant operates two rock deposits for its cement operations. The bulk of the material underlying both deposits is "natural cement rock." Its Calera or "low-line" deposit is located 1 mile from the plant and its Navio or "high-lime" deposit 10 miles away. Physically the deposits are of such nature that drilling and blasting operations are very difficult.

The cement rock is fourd in two or three 30-foot layers inclined 30 deg. with the horizontal, and 100 to 300 feet apart. In order to reach the layers tunnels are drilled through the hills to them. The system consists of main tunnels with connecting tunnels and stopes drilled almost straight up to reach the layers at other levels. Whenever the layers are followed from the top hoisting of the rock is done.

All the drilling is done by air drills. As many faces are worked as required to keep up production and chemical corrections are made to select the proper high- and low-lime rock.

Analysis of both kinds of rock.

	Low Lime	High Lime
Si02	14.4 per cent.	9.2 per cent.
Al203	5.4 per cent.	3.8 per cent.
Fe203	1.9 per cent.	1.5 per cent.
Ca0	43.1 per cent.	47.6 per cent.
Mg0	1.7 per cent.	1.1 per cent.
Loss on ignition	32.6 per cent.	36.0 per cent.

G. E. d.c. 60-hp. locomotives haul 1.5 ton dump cars loaded with rock to the crushers outside the tunnels and on practically the same level. The main and auxiliary tunnels are served by a single standard-gauge track supplemented by a short siding near the crushers.

Crushers and Haulage The hardness and large size of the rock compelled the company to use primary crushing machinery at each deposit. At the la Calera deposit there are two Traylor Bulldog gyratory crushers and two hammermills with a total output of 1,000 tons per day. A vibrating screen turns back sizes bigger than ⅜-inch. The crushed rock is conveyed by an 18-inch wide, 300-foot long belt conveyor to a crushed stone storage of 20,000-tons capacity where a scraper piles it up.

At the Navio deposit an English make Hatfield gyratory crusher and a Traylor Bulldog are fed 14-inch rock and reduce it to 4-inch size. The crushed rock flows by an 18-inch wide, 150-foot long belt conveyor to a 2,000-ton crushed stone storage. A car puller moves the loaded cars to the crusher.

From the Calera deposit a steam locomotive hauls trains of twenty 2-ton side dump cars.

Since the Navio deposits are 10 miles away from the plant the company operates its own trains using for part of the route the 1-meter-gauge track of the North Longitudinal railroad. A steam locomotive hauls fifteen 25-ton side-dump cars. Loading is done directly into the cars at the storage and the weight of each car is checked.

No crushing is done at the mill to the 3/8-inch low-lime rock from the Calera deposit which is taken by a 24-inch wide, 150-foot long belt-conveyor to a crushed-stone storage. The loaded cars with 4-inch rock from the Navio deposit are pushed by the locomotive through the crusher house leaving the last car abreast the hopper. An overhead hoist powered by an electric motor operates the dumper arm and dumps the contents of the car into the hopper. The cars move on by gravity.

Beside the hopper is the operator's platform containing controls for all the crusher-house machinery.

A bell-head Traylor crusher reduces the stone from 4- to 2½-inch size. The crushed stone is taken by a belt-conveyor to a Traylor finishing crusher and an Allis-Chalmers 36- to 16-inch roll crusher and a revolving screen reduces it to 3/8-inch size before it goes to storage.

Storage and Raw Material Grinding The covered space for high- and low-lime crushed rock, clinker, gypsum and coal is 700 feet long and 60 feet wide and is parallel to the main axis of the plant, between the two sets of kilns.

The space is spanned by two Whiting cranes and one Shaw Box crane, with 3-cubic yard clamshell buckets, operating on a craneway 40 feet above the bottom of the storage. The raw bins for the crushed stone, clinker, gypsum and coal are kept filled by the cranes.

Under the crushed stone bins are two Schaffer Poidometers through which the laboratory determines the proper amount of high- and low-lime cement rock. The laboratory checks the combined product every hour and uniformity is maintained constant during operation.

Due to water filtrations at both rock deposits the crushed stone must go through a drying process before grinding. Three 7 by 70-foot rotating driers are used for this operation. The dried material is delivered by an 18-inch wide belt conveyor to four Traylor 7- by 26-foot ball mills powered by 500-hp., 187½-r.p.m., G.E. synchronous motors and two Traylor 8- by 40-foot ball mills powered by 1,050-hp., 750-r.p.m., wound-rotor induction motors. While the synchronous motors are attached through 60-inch diameter, 110-V. d.c. Cutler Hammer magnetic clutches the induction motors are directly connected through gear reducers.

The crushed stone is ground to 20 per cent. residue over 178 mesh with a normal grinding of 13 metric tons per hour and 25 metric tons per hour respectively. Following the mills are twelve concrete silos of 23-foot diameter and 70-foot height with a capacity of 8,000 metric tons.

Burning At the feed-end of each kiln is a 100-ton bin from which it is fed by a screw-conveyor and chain drive with adjustable speed. At the present time this is adjusted by the kiln operator from the firing deck through remote control but a Selsyn generator system will soon be used.

A 2,700-degree F. burning temperature is kept constant by the kiln operator, controlled at the firing deck and recorded at the laboratory by Brown recording pyrometers.

The kilns are fired by pulverized coal. At the Traylor kilns air is furnished at 150 degrees F. from over the rotating coolers. Since there are no rotating coolers at the F. L. Smidth kilns air is furnished directly from the atmosphere by a blower.

Coal preparation equipment is housed near the kiln and consists of three Ruggles-Coles rotary driers and two 6-foot diameter by 22-foot-long Traylor ball mills operated by 300-hp. G.E. synchronous motors.

The firing floor is remarkably clear of apparatus, the only prominent features being the blowers, the control panel, the over-head pipe and air manifolds with the draft gage of the kilns and the coolers, indicating pyrometers and ammeters for the motors. Emergency driving of the kilns is provided for by two 50-hp. gasoline engines.

Each Traylor kiln is provided with a 7-foot by 70-foot rotating cooler discharging the clinker to 18-inch wide by 200-foot-long inclined drag-chain conveyor. The Smidth kilns are provided with a Smidth grate cooler and discharge to the same drag-chain through a shaking conveyor. Five- by 20-foot Fuller coolers follow the Vulcan kilns.

Two of the kilns, viewed from the firing floor, which is clear of apparatus, except the blowers.

Clinker Grinding At the end of the drag-chain conveyor a 1-ton F. L. Smidth weigher checks the amount of clinker delivered by the kilns The weigher discharges its bucket automatically to a 2-foot 4-inch Traylor gyratory crusher. The crushed clinker is delivered to the clinker storage space and distributed by the overhead traveling crane to the bins over the finishing mills.

In the clinker-mill section are three 7- by 26-foot Traylor ball mills powered by 500-hp., 187½-r.p.m. G. E. synchronous motors connected through a magnetic clutch and a Smidth 8- by 43-foot ball mill powered by a 1,050-hp., induction motor connected through a Symetro speed reducer.

Each mill is fed with clinker through a Schaffer Poidometer. Next to the clinker bin and also filled by the overhead traveling crane is a gypsum bin that provides the mill with 5 per cent. of gypsum through a belt-conveyor and sliding gate. An 80 per cent. $CaSO_4$ gypsum is used.

Three kinds of cement are manufactured: normal cement that has a 6 per cent. residue over 178-mesh, super cement or quick-hardening cement that has 0.5 per cent. residue over 178-mesh, and waterproof cement. This last kind of cement is obtained by adding a mix of heavy residual oil and tallow before the clinker grinding.

Cement Storage and Packing The cement storage consists of fourteen large concrete silos of 33-foot diameter and 85-feet high providing 34,000 metric tons storage. Cement is fed into the top of the silos by pipes. There are two lines of screw conveyors under the silos and interspaces for conveying cement to the pack-house. Four 2-spout Valve Bag sackers are used to fill cloth or paper bags. Ample provision has been made for shipping by railroad or truck.

Trackage facilities are ample, providing empty car storage for ten cars at each side of the pack-house. The cars are moved by a car-puller during loading. Equal loaded-car storage and run-around tracks for the pack-house and bag house are being considered to provide switching to be done without interfering with the loading cars.

Power House El Melon operates its own new hydro-electric power plant 60 miles northeast of Santiago, near Rio Blanco. Water from the Aconcagua and Colorado Rivers, under 224 meters static head, drives two Westinghouse 10,000-kv.-a. alternator through Pelton turbines.

Hoisting rock in one of the main galleries at Calera mines.

The power is generated at 6,600 volts, 50 cycles and is stepped up by two Westinghouse 10,000-kv.a. transformers to 66,000 volts.

There are two 10,000 kv.-a. 66,000/44,000 G. E. auto-transformers at the mill at La Calera. The plant is provided with Westinghouse switchgear and a 300-kv.a. transformer for auxiliary service and lighting purposes.

The substation at the mill is equipped with six 1,500-kv.-a., 44,000/550-volt step-down transformers. The main switchboard is made up of the low tension bus bar, with meters, totalizing meters, 550-volt general power feeder panels, 110-volt feeder panels, raw and finish mill panels, etc. From the basement below the switchboard starts a roomy 600-foot underground tunnel that carries the connecting cables for all the equipment.

An emergency Diesel-electric power plant consisting of two Nordberg engines, direct-connected to 1,500-kv.-a., 240-r.p.m. International Electric Company alternators, provides emergency power in case of failure at the power house. By means of a synchronoscope indicator both plants can be synchronized for high demands.

Electrical Equipment Compressed-air for manufacturing purposes and drilling is provided by a compressed-air plant at la Calera Mine by four PRE-2 Ingersoll-Rand compressors of 2,000-c.f.m. each, powered by 400-hp. G.E. synchronous motors. A substation consisting of two 1,250-kv.-a., 44,000/550 volt Ansaldo transformers with Siemens-Schukert switchgear provides the necessary amount of power. At Navio Mines compressed-air is furnished by two PRE-2 Ingersoll-Rand compressors of 2,000-c.f.m. powered by a 400-hp., 187½ r.p.m. General Electric synchronous motor. A 1,250-kv.-a. 44,000/550 volt Ansaldo transformer and home-made switchgear provides the power at this deposit for drilling and crushing purposes.

All the squirrel-cage motors at the mill are started through compensators and auto-transformers. This is also true of the 500-hp. and 400-hp. synchronous motors. Time-limit overload protection is provided for every motor. Push buttons and magnetic starters are used wherever applicable. A unity power factor is maintained through the leading power factor synchronous motors. Motor-generator sets, 110-volt, provide d.c. current for the excitation of the synchronous motors, coal feeders of the kilns, and for laboratory purposes.

A 1,000-kv.-a. Electromelt steel electric melting furnace will be installed to provide the mill with high grade steel for cement manufacturing needs. Two step-down transformers of 44,000/13,200 volts and 13,200/220-60 volts hooked up from the main bus at the substation will provide power for the furnace.

A trainload of 1½-ton dump cars on its way to the crusher-house. In the background, the cement silos.

A new large building at the entrance of the mill was recently built to replace the old machine-shop building. It is equipped with modern machine tools and includes an arc-welding plant, brazier's shop and foundry.

The electrical shop is located next to the substation building and includes a store-room for motor replacements and a meter-testing laboratory.

Phosphates Manufacturing In 1938 El Melon began taking advantage of its phosphate rock properties at Coquimbo and, looking forward to other similar types of manufacturing processes, started phosphate production. The whole old cement plant at La Calera was taken over for this purpose and at the present time El Melon phosphates have become very well known products all along the country for agricultural purposes. Over 40,000 tons are produced every year.

Chemical Laboratory At one side of the administration building is the chemical laboratory building where samples from different parts of the cement manufacturing process are tested every hour. The laboratory is spacious and includes a 100-ton Amsler testing machine, a Wagner turbidimeter, etc.

Housing Development Back to the west of the mill is a housing community made up of 350 houses for workers and 60 houses for employees. Schools for boys and girls, a Catholic church, club for social affairs, football field and a technical school for qualified boys is provided. The houses are nicely surrounded by lawns and gardens. Water and electricity are furnished from the mill. A commissary building provides food at low expense for the laborers and their families.

A similar housing development of 150 houses has been recently completed at Navio Mines. Grading, sodding and planting is being carried on and both places have taken the appearance of a city park community.

The officers of the company are: General Manager, Enrique Ariztia, a Columbia University graduate; Assistant Manager, Tomás Douds. The plant superintendent is Enrique Delgeon and the head of the technical department, Hernán Edwards.

Neuheisel (from page 76)

Pioneer reciprocating plate feeders discharge this rock into the three Gilson pulverizers—a No. 22 and two No. 16. The agstone produced by these pulverizers drops on a belt conveyor which also receives the fine material passing through the bottom deck of the screen. From the conveyor the agstone is discharged through a chute into the 160-ton truck-loading bin. When this bin is full the agstone is diverted through chute to a 110,000-ton stockpile.

The 1-inch road rock over the bottom deck of the screen is chuted to a stock-pile with a capacity of about 11,000 tons.

A 30-ton Fairbanks truck scale with a 40-foot platform is being installed to weigh truck shipments. As the access road is on a fill the concrete foundations go down 22 feet to solid rock.

The crusher is flat-belt-driven by an International UD14 engine. The first conveyor and the screen are driven by a smaller International engine, and the feeders and final conveyor are similarly driven. The No. 22 pulverizer is driven by a Caterpillar D13,000 engine and each of the No. 16 pulverizers by a 110-hp. International UD18 engine.

The Arcadia plant is located at the side of a road 5 miles out of the town and near the quarry level. It has a Pioneer jaw primary crusher which is driven by a Case Size LAE gasoline engine. The conveyor from the crusher and the Pioneer vibrating screen following it are driven from the crusher. A chute from the screen carries road rock into a wooden truck loading bin.

The rock for the pulverizer is chuted into a Pioneer steel bin. A reciprocating feeder discharges this stone into a No. 16 Gilson pulverizer from which a conveyor carries the agstone to a truck-loading bin. The pulverizer is driven by an International engine.

The new Diamond portable plant to be installed will have a 24- by 36-inch primary jaw crusher and a No. 28 Gilson pulverizer will be used. This plant will be powered by a 247-hp. Buda Diesel engine.

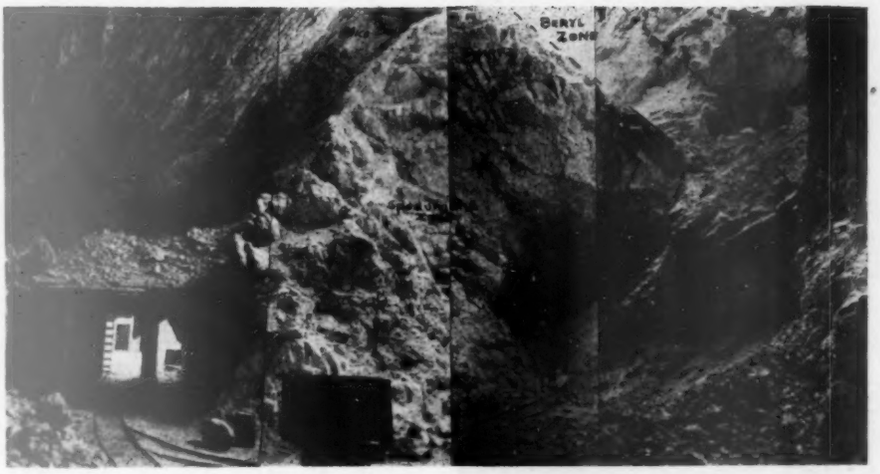
Texas Publication on Respiratory Diseases

New aspects and approaches to the problem of diseases caused by quartz and cotton dust and welding fumes are examined in an article published in the summer issue of *Texas Reports on Medicine and Biology,* a journal published by the University of Texas Medical Branch at Galveston. The authors, Dr. Carl U. Dernehl and Dr. Carl A. Nau state that ill effects from dust exposures are chronic rather than acute. They conclude that aluminum dust seems to possess some value as a therapeutic agent in silicosis, but that its greatest usefulness undoubtedly lies in the prevention of silicosis in those not yet affected.

Beryl Found in Large Crystals

At the Ingersoll Mine in the Black Hills of South Dakota . . . . .

BY *Arthur T. Johnson*
CONSULTING MINING ENGINEER



Composite photograph of part of the Ingersoll Mine showing zoning of minerals in Dike No. 2.

another P&Q exclusive

BERYL is a complex silicate of aluminum and beryllium. It is the source of the metal beryllium, which was still a laboratory curiosity as late as 1921. It crystallizes in hexagonal prisms, varying in size from minute crystals to large masses producing many tons. The mineral occurs in small crystals in the mica zone of pegmatite dikes, associated with soda feldspar, quartz, tourmaline and mica. The larger masses described here are associated with segregated bodies of potash, feldspar, quartz and lithia minerals.

The principal uses of beryllium, a light metal extracted from the mineral beryl, depend on its ability to form unusual alloys; particularly with copper. These alloys are heat-treatable, have high fatigue strength, high elastic limit and hardness. They have a high tensile strength, excellent electrical conductivity and have many fabrication advantages. In the aircraft industry they are used in engines, guns and manifold other parts.

A new use for the metal beryllium has been indicated by information released relative to the atomic bomb and facts about the raw materials of atomic power. Beryllium, subjected to radiant energy from radium, releases neutrons to bombard U-235. Uranium is then transmitted to neptunium, which is radioactive and unstable and loses electrons to become plutonium, or U-239, the active material in the atomic bomb.

In view of the fact that beryl usually occurs in small crystals the occurrence of beryl at the Ingersoll Mine of the Black Hills Keystone Corporation, at Keystone, South Dakota, is as unusual as the occurrence of the large spodumene crystals at the Etta Mine, also at Keystone, which has interested geologists and mineralogists for many years. The largest crystal of spodumene, a lithium aluminum silicate, is reported to have been 42 feet in length; several attained lengths of 30 feet, varying in diameter from 3 feet to 4 feet. From the nature of their crystal form they have been termed "logs." A single crystal, 36 feet in length and 3 feet in diameter, would weigh slightly over 25 tons. Several unusual occurrences of beryl, at the Ingersoll Mine, illustrate the possible size which beryl crystals may attain when crystallizing from granite magmas in pegmatite dikes.

The first occurrence of a large beryl crystal was recorded in 1933. At that time the Ingersoll Mine was being operated for beryl and amblygonite. Operations had been started at a point exposing a crystal of beryl measuring 44½ inches from top face to bottom face. The occurrence of

View of Ingersoll Mine showing locations of Dikes No. 1 and 2. The mill and flotation plant is at right.

this crystal had been reported some years earlier (December, 1919) in the *Pahasapa Quarterly* of the South

This 16-ton beryl crystal was mined out of Dike No. 2 in 1942.

Dakota State School of Mines, under a title "The Largest Known Beryl Crystal." At that time it was recorded that some 2½ feet of the crystal had been removed and from the section then exposed it was estimated that this removed section weighed about 4800 pounds. Later mining operations revealed that the remaining length was only 31 inches, thus giving the crystal a total length of approximately 5 feet. The crystal was surrounded on one corner by potash feldspar and on the opposite corner by amblygonite, the balance of the crystal being imbedded in a mass of quartz.

All of the larger crystals of beryl later exposed in this dike—designated in the operations of the mine as Dike No. 2—were found in a similar environment. They lay in a zone roughly paralleling the long dimension of the dike and about 10 to 15 feet from the hanging wall of the dike. In all except one instance it was noted that the crystals tended to grow outward and downward from the hanging wall of the dike. This condition was also true for the beryl crystals uncovered in Dike No. 1. Here, however, the crystals were found practically adjacent to the hanging wall. An interval of some 12 to 15 feet separated the crystals found on Dike No. 2 from each other. The zone in which the large crystals were uncovered was restricted to a vertical depth of approximately 30 feet. No large masses of beryl were uncovered in the operations below that level.

The zoning within the dike is well shown in the view taken underground in Dike No. 2. Small crystals of beryl occurred with the mica in a soda feldspar matrix next to the hanging wall of the dike. All of the larger masses were uncovered in the zone lying between the mass of potash feldspar and quartz. Amblygonite was found associated with the beryl in this zone.

It was not until 1943 that any large masses of beryl were uncovered in Dike No. 1 of the Ingersoll Mine. Smaller beryl crystals, some 2 to 3 feet in length, had been mined in operations for scrap mica. In the stripping operations, following the mining operations for lepidolite during 1943, a mass of beryl, from which some 26½ tons were removed in the latter part of the year, was

This beryl crystal taken out of Dike No. 2 in 1933 weighed 24 tons.

uncovered and removed. It appeared to be made up of two separate crystals intergrown with each other. The bottom of this mass was encountered about 30 feet above the working level from which the lepidolite was trammed to the mine bins. This level was roughly about 100 feet from the surface and some 10 to 12 feet from the hanging wall contact of the dike. The irregular mass extended over a length of 24 feet and was 12 feet wide at its widest exposure.

About 7 feet above this mass of beryl occurred the largest single mass of beryl encountered to date. A total of 61¼ tons of beryl were removed during a period extending from August to October of 1944. The crystal extended upward for a total length of 28 feet. At the bottom it was 8 feet in width at its widest point. The top of the crystal extended practically to the schist contact being only 4 inches from the schist hanging wall contact at that point. It was surrounded on one side by quartz, on another side by feldspar and had been covered by the mass of lepidolite previously mined out, and which made up the core of the dike. At the bottom the crystal was approximately 8 feet from the wall of the dike—the dike dipping about 60 degrees in this area. Later, to the left of the crystal, and completely surrounded by quartz, two additional masses of beryl were uncovered, producing a total of 11¼ tons.

The following tabulation will summarize production to date from the Ingersoll Mine:

1933.....	57.44 tons
1934.....	11.05 tons
1935.....	Mine inactive
1936.....	Mine inactive
1937.....	None
1938.....	9.700 tons
1939.....	32.400 "
1940.....	18.179 "
1941.....	52.900 "
1942.....	78.168 "
1943.....	34.260 "
1944.....	113.256 "

It is interesting to note that only 10 years ago the entire recorded world production of beryl was less than 500 tons. Since that time world production has increased tenfold, the bulk of it coming from South America. Since 1938 the Ingersoll Mine has produced over one-

The 34-ton beryl crystal which was mined from Dike No. 2 in 1942. Several smaller crystals are at right.

third of the production credited to the United States.

Hydro-Separator at Van Sciver Plant Recovering Fine Sand*

A HYDRO-SEPARATOR was recently installed at Van Sciver plant of the Warner Company at Tullytown, Pennsylvania, for the recovery of very fine-grain sand which formerly went to waste. This wasted sand was so fine that it passed through a 50-mesh sieve and a large percentage of it passed through a 325-mesh sieve. The concrete sand-settling basin, which is very efficient up to the 80-mesh sieve, failed to trap this fine sand, and it remained in suspension in the wash water and overflowed to the lake.

Over the years this fine sand formed a shoal in the Van Sciver lake which recently had to be removed with the 10-inch suction dredge "Midget". This operation was costly from an electric-power standpoint, so thought was given to the problem of eliminating the shoaling by reclaiming the sand. Tests of the waste water were made constantly to determine the fine sand content, but these always showed there was not enough tonnage of the useful grain sizes to justify a large expenditure, until a supply of fine sand was found at the bottom of Van Sciver Lake. This supply was being wasted by the agitation of the elevator buckets on the dredge "Valiant" and this tonnage, added to that being wasted in the overflow of the concrete sand basin, seemed to warrant an expenditure for a hydro-separator.

Tests to determine the size of the hydro-separator required to handle the total water of the sand system were made with a pilot plant which was set up under the direction of Irving Warner. Samples of the sand made by the pilot plant were analyzed for quality in the Cedar Hollow laboratory and found to be very satisfactory for concrete use. The indicated recoverable tonnage of sand per hour was gratifying, and it was definitely decided to proceed with the intallation of the hydro-separator.

Pilot plant tests showed that the separator should have a settling area equivalent to a 50-foot-diameter tank, which is the approximate diameter of the tank in the accompanying illustration.

A 36-inch-wide flume diverts the 12,000 gallons per minute of wash water from the concrete-sand-settling area to the stilling well at the center of the hydro-separator. The purpose of the stilling well is to reduce the velocity of the water to a static head, whereby it can be quietly and evenly distributed to the settling area. As the water travels gently from the stilling well to the overflow, the fine sand settles, is collected by the slowly revolving spiral scrapers, and delivered to a center cone containing the suction intake of a Hydro-seal centrifugal pump. This rubber-lined pump returns the fine sand to the concrete and plastering sand systems, where it is trapped and incorporated in these commercial products. The rake mechanism was purchased from the Hardinge Company of York, Pennsylvania, and the Hydro-seal pump from the Allen-Sherman-Hoff Company of Philadelphia.

Since the "bugs" have been removed from installation, it has come up to the expectations of the engineering department and has saved many an operating headache by helping to meet recent finer concrete sand specifications of various state highway departments. Shoaling conditions in Van Sciver lake have practically ceased, and fine sand, formerly wasted is now being sold as part of an improved concrete and plastering sand.

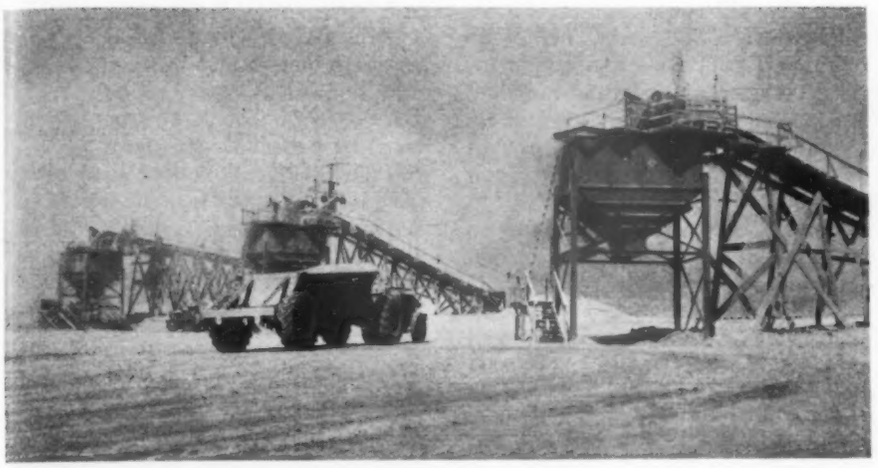
Calmness of the water allows the sand to settle to the bottom of the tank while the overflow of water runs off into Van Sciver Lake.

*An abstract of an article by Frank K. Wills, General Superintendent of Warner gravel plants, which appeared in the September, 1945, *Warner News*.

Bauxite Output of U. S. Shows Sharp Decrease

Domestic mine production of bauxite dropped sharply in 1944 as the result of the accumulation of excessively large stocks and of decreased demand. According to the Bureau of Mines, the output of crude bauxite in 1944 totaled 3,721,135 short tons compared with 8,156,551 tons mined in 1943, a drop of 54 per cent. The 1944 output was valued at $14,402,497 compared with $30,659,900 in 1943.

MIRACLE PLANT BUILT IN TWO MONTHS SUPPLIES ROCK FOR ARMY AIR BASE



Scene at the base-rock plant built to supply material for $20,000,000 job at the Fairfield-Suisun Army air base near Fairfield, California.

another ON THE SPOT report

CUSHIONING the concrete slab runways and aprons of major air fields with base courses of properly proportioned rock has become standard practice as planes grow ever larger and heavier. One of the biggest projects now in progress involves the expenditure of $20,000,000 at the government's Fairfield-Suisun Army Air Base, located about halfway between San Francisco and Sacramento, California. The job, not halted with the end of the war since Fairfield-Suisun is to be a permanent installation, is being carried out under the jurisdiction of the United States Engineers, Sacramento Division, and the general contract is a joint venture between the Morrison-Knudsen Company of Boise, Idaho, and Stolte, Inc., of Oakland, California.

Specifications called for more than 1,000,000 tons of crusher-run base rock, which had to be produced quickly to meet the demands of the contract. Tests disclosed that a deposit six miles from the airfield contained an ample supply of rock and, with due regard for the advantages of the hillside terrain, a 900-ton-per-hour plant was designed to supply the material over a 3- to 4-month operating schedule. Despite extreme difficulty encountered in rounding up the necessary equipment, the contractors were able to erect the entire plant and get it into operation in the 60-day period between July 1 and September 1, 1945.

Some of the crushers, screens, and bins were purchased new on high priority for immediate delivery. Others were borrowed from West Coast aggregates producers. Some pieces of equipment were quickly rebuilt from surplus stocks in the far-flung yards of the contractors. The 19 separate conveyors were, for the most part, fabricated from the 9.9-mile belt-conveyor system which two or three years ago carried the aggegates from a plant at Redding, California, to the construction site of Shasta Dam!

The Fairfield plant lay-out and its flow-sheet are fairly well depicted in the accompanying perspective sketch. Attempts to photograph the plant proved futile because of the dense cloud of dust which lay over the immediate vicinity as a result of the dry operations, since none of the material is washed. Production has been averaging about 750 tons per hour and a 20-hour daily operating schedule is generally maintained. As quickly as it is produced, the base-course material is carried away to the airfield by a fleet of 36 Euclid heavy-duty haulage units, each having a carrying capacity of 20 tons.

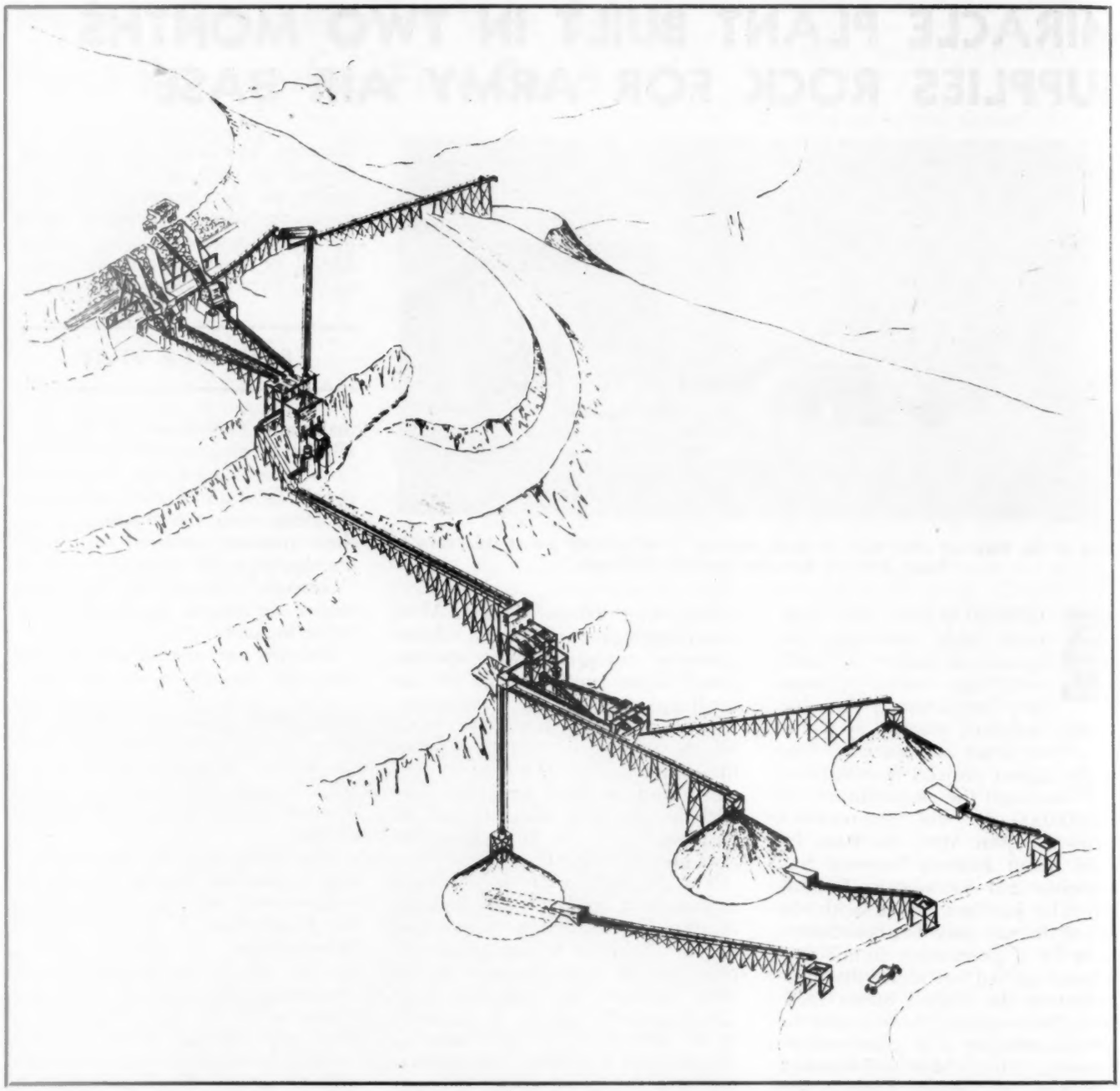
Blast holes in the quarry uphill are opened with wagon drills and, after shooting, the rock is loaded by power shovels into White dump-trucks and Maxi 6-wheelers, which deliver it to the three primary jaw crushers arranged in line. Largest of these is a 48- by 72-inch Birdsboro-Buchanan machine, the others being a 42- by 48-inch Traylor and a 42- by 40-inch Allis-Chalmers Blake-type unit. The feed is handled by a Telsmith 4- by 12-foot apron feeder and two Sheridan (Traylor) 5- by 12-foot pan feeders. Separate belt-conveyors carry the product of each of the three primaries to the secondary-reduction machines, pickers stationed along the belt removing clay lumps. Ahead of each crusher is grizzly which bypasses the minus-6-inch

By HARRY F. UTLEY

material. This is carried off laterally by a belt-conveyor to a 24- by 72-inch revolving screen, which takes out the 2- to 6-inch rock and returns it, along with the product of the three primary crushers, to a surge bin supplying the secondary crushers. "Throughs" from the revolving screen are carried by another conveyor to waste.

Grizzlies in the chutes leading into the bin above the secondary crushers scalp off the plus-4-inch rock which is fed by three 3- by 5-foot Conveyco reciprocating feeders to two 4-foot Traylor gyratories with 16-inch feed openings, and a 10-inch Allis-Chalmers Newhouse crusher.

The product of the three second-stage-reduction machines, plus the minus-4-inch material which passes the grizzly bars, is then carried by belt-conveyor to three primary screens, all 5- by 12-foot Tyrock single-deck vibrators, which pass the minus-3-inch finished material to stock piles, the oversize going to two tertiary crushers—another 10-inch Allis-Chalmers Newhouse and a Symons 4½-foot cone. The crushed product is conveyed by a single belt to two 5- by 10-foot Tyrock two-deck screens making minus-1-inch rock which is carried by belt to another finished-material stock pile. The oversize from these screens can be returned either to the cone crusher (in closed circuit with the double-deck screens) or to the belt which stockpiles the minus-3-inch rock. As the sketch shows, three stockpiles are maintained, the two at the left stocking minus-3-inch material and the one at the right 1-inch and downward. Reclaiming belts in timbered tunnels beneath the stockpiles have a combined capacity of 1,000 tons per hour and carry the two sizes of finished material to three Bodinson all-steel bins, which load the fleet of 20-ton



Rock plant designed and erected in 60 days by Morrison-Knudsen Company, Inc. for production of base course materials to be used in construction of runway and aprons at Fairfield-Suisun Army Air Field.

Euclids for delivery to the air base.

The plant was designed by George Barlow of the Morrison-Knudsen Company, working in conjunction with H. C. Leventon, general superintendent, and Walter Saxe of the Conveyor Company, Los Angeles. The last-named concern contributed three of the feeders and most of the electric motors, it also rebuilt some of the crushers, fabricated conveyor drives, etc. Adolph Haidlen is the plant superintendent. The deposit is an old cement-rock quarry whose plant, owned by the Pacific Portland Cement Co., has been abandoned for many years. The old mill building is being utilized by the contractors as a machine shop for the maintenance of equipment.

Concrete aggregates are being supplied by commercial producers in the San Francisco-Oakland and Sacramento areas, the supply being augmented by a plant recently erected by the contractors on the Yuba River near Marysville, California. All of it is shipped in to the batching plants at the air base.

August Sulphur Output Highest in U. S. History

In August, 1945, the month in which the war ended, more native sulphur was produced in the United States than in any other previous month, according to the Bureau of Mines, United States Department of Interior. The production rate was nearly 30 per cent. higher than the average of 1944. The tonnage shipped from the mines declined from the record set in July, 1945, but it was 18 per cent. greater than was moved in August, 1944.

Since December, 1944, stockpiles have gradually diminished, but in August production overtook sales and stocks increased 12,954 tons.

An 800-page catalog and directory, the 1946 (35th annual) edition, of the American Society of Mechanical Engineers is now being distributed to members. A 16-page insert covering all A.S.M.E. publications is included.

Cleaning and Lubricating System Prolongs Life of Wire Cables

By IVAN ARCHER
Frank Flinn Rock & Construction Company, Kansas City, Missouri

another P&Q exclusive

BEFORE we adopted a definite rope maintenance policy, wire cables on our two ¾-cu.-yd. front-end loaders were lasting us from three days to ten days. It was the exception when a cable gave us two weeks' service. We were using ordinary type cable and running the ropes until inspection showed they should be retired, or until a rope broke. The cables were lubricated but once — when they were placed on the machine. The factory lubrication of the new rope was not sufficient for our type of work — or this is what we thought.

• The author operating a front-end loader at the Frank Flinn Rock & Construction Company limestone mine.

About two years ago we completely changed our wire rope maintenance policy. At the same time we switched to all preformed cable and replaced all non-preformed ropes on the job.

The new policy called for daily inspections and also daily lubrications. Each rope is now checked before the loader is started in the morning. It is greased at that time.

We soon found that this simple addition to our former rope policy was giving us considerably longer rope life. However, the ropes were breaking at the loader or dipper end. The rest of the cable was in good condition and showed little wear.

Cecil Totten, our plant foreman, decided that we should put on six or eight inches more rope than actually needed. When the dipper end showed wear, we could cut back that much and we would gain almost a new rope life from the cutting.

Because the rope was preformed, there was no loss from frayed ends or unwinding when the cut was made. No seizing was necessary. The correction operation required but a few minutes. It was such a simple operation that there was no temptation to "go on" when a rope showed signs of wear.

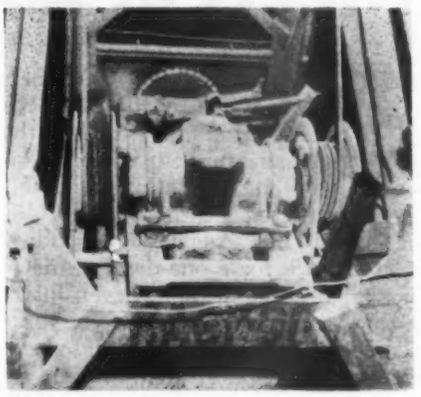
We soon found that the daily cleaning and lubrication was showing results also in better sheave wear. We double checked this by daily sheave groove inspections. We have had no sheave groove wear since we adopted the present maintenance policy. Before we made the change, it was not uncommon for us to lay up a machine in order to have the sheave grooves built up by welding.

Under our present rope maintenance policy, cables are lasting us from 30 to 45 days. The 6-inch worn end is cut off and a new fastening is made after 20 to 25 days' use.

When a new rope is put on a drum, we allow two wraps. This takes care of the 6-inch cutback at the worn end. It is much simpler than switching ends; moreover, our worn end is often so badly damaged that it would not be suitable for the drum and would interfere with the uniform spooling which we must have.

The only additional cost is the footage charge on the 6-inch cutback, lubricant used in our daily lubrications, and the difference in the initial price of preformed over non-preformed, plus the half hour to one hour a week in making daily inspections and in applying the grease. For a total charge of 20 per cent., we have cut our rope cost at least 100 per cent.

• Foreman Totten showing worn end of cable. With preformed ropes there is no unwinding, no loss from frayed ends.



• Cables on two drums of front-end loader. All ropes are now inspected and treated every day.

And what is more important than the actual dollar savings, we are getting better machine operation and doing a much safer job of loading without any machine lay-ups.

Bentonite Production Tops 500,000 Tons

Bureau of Mines reports show that in 1944 bentonite production increased 14 per cent., to over a half-million tons, and for the sixth consecutive year established a new record. Wyoming and South Dakota were the principal beneficiaries of the expansion in volume; decreases were reported in several states. Wyoming supplied 36 per cent. of the total output and South Dakota 31. Owing to the sale of a larger proportion of higher priced grades, the average value reported by producers to the Bureau of Mines increased from $6.24 per ton in 1943 to $6.60 in 1944.

Uses for Screenings Described in Article

The August number of *Stone Briefs,* a National Crushed Stone Association publication, carried an informative article on "Uses for Stone Screenings" by A. T. Goldbeck, engineering director of the association. Tables on the average gradation of screenings from trap rock, limestone and other types of plants were given, as well as general characteristics of stone screenings and suggestions for ways of using them. Also included were the Hubbard-Field stability tests on sheet asphalt mixtures and mechanical analyses of aggregates used in mixtures.

So. California Section of A. I. M. E. Meets at Los Angeles

By HARRY F. UTLEY

another ON THE SPOT report

MORE than 60 members and guests of the Southern California Section of the American Institute of Mining and Metallurgical Engineers gathered at the Ambassador Hotel in Los Angeles on Friday, October 19, for a one-day fall meeting of the organization. Seven interesting technical papers were presented during the morning and afternoon sessions, interrupted only by an informal luncheon which was in the nature of a gay re-union for many of the institute members. A highlight of the gathering was the stag dinner in the evening, served in the beautiful Embassy Room of the Ambassador.

E. O. Slater presided at the dinner, the chief speaker being Irvin Borders, assistant regional manager of the Pacific Southwest Division of the Committee for Economic Development. Mr. Borders' address, entitled *Reconversion and the Engineer,* explained the important status of the engineers and their position nationally in the current readjustment period.

Henry Mulryan served as chairman at the morning session and George Stern and Roy L. Cornell were co-chairmen at the afternoon assembly.

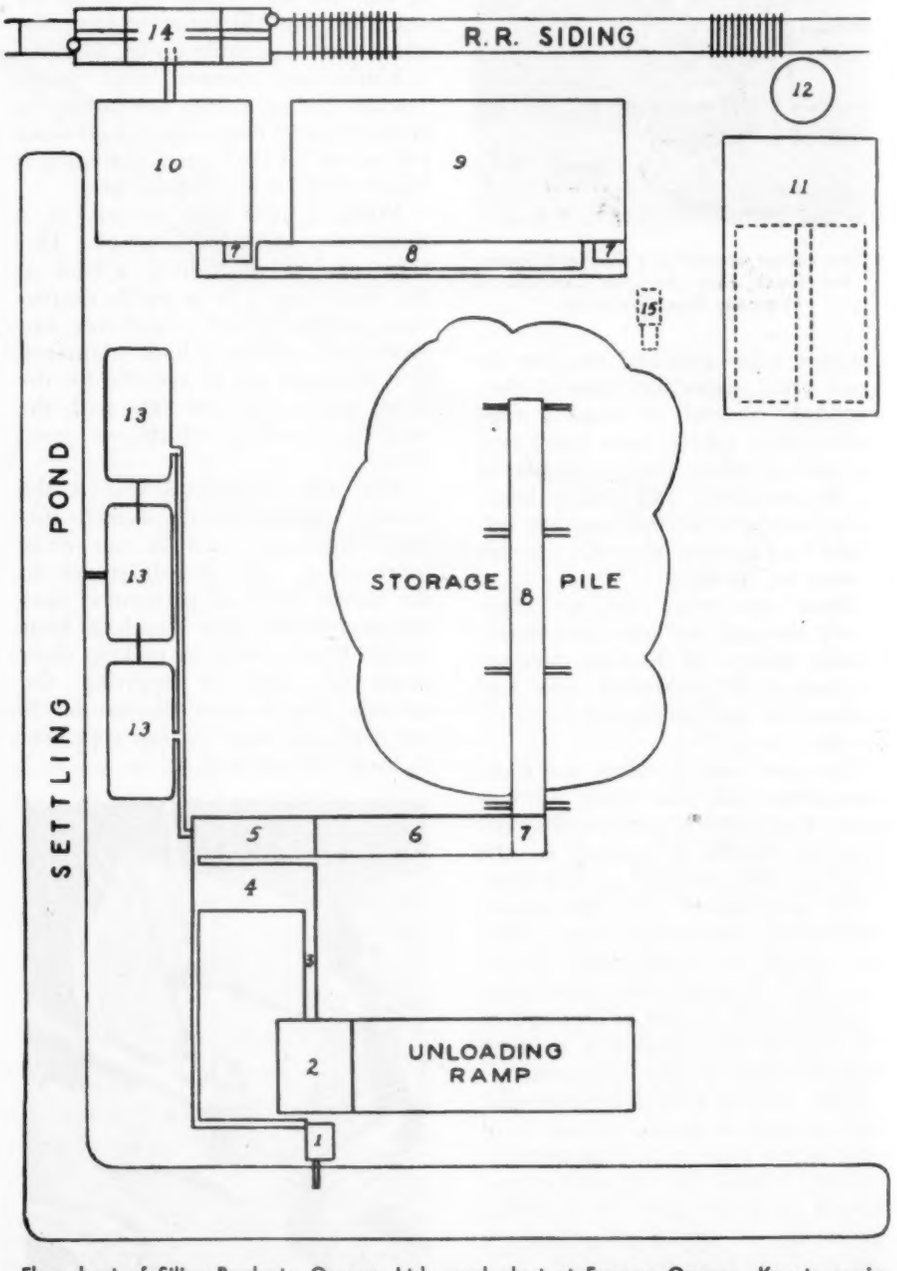
G. A. Joslin was the program chairman.

Of particular interest to PIT AND QUARRY readers was W. D. Lowry's paper on *Oregon Foundry Sands.* The author, associate geologist with the Oregon Department of Geology and Mineral Industries, has done considerable research in the foundry-sand field and the recent establishment of a modern processing plant near Eugene was due in large part to his efforts.

Until this year, nearly all the silica sand consumed by steel foundries in the Pacific Northwest (approximately 50,000 tons in 1944) came all the way from Ottawa, Illinois. With the introduction early this year of a very high-grade silica sand from the Eugene plant, all but two of the many foundries in the Portland area are using this new sand.

The Eugene plant, financed by the Defense Plant Corporation at a cost of approximately $175,000, was designed and built by K. E. Hamblen and L. E. Bufton, and the firm is known as the Silica Products Company. Processing methods were described by Mr. Lowry and readers interested in a detailed description are referred to the July, 1945 issue of PIT AND QUARRY, pages 79-81. Briefly, the raw sand, excavated by drag-line, is transported 1½ miles from pit to plant by motor trucks. Emulsification takes place in a log-washer and most of the clay is removed by a Dorr duplex classifier. The clay is carried away in the overflow to settling ponds and the sand goes on to a 50-foot sand drag where any remaining clay is carried away by the overflow. Steam coils dry the sand and shipments are made in railroad cars.

Some additional details mentioned by Mr. Lowry, not revealed in the PIT AND QUARRY article, are interesting. The original plans for the plant called for the generation of steam with fuel oil but war restrictions



Flow sheet of Silica Products, Oregon, Ltd., sand plant at Eugene, Oregon. Key to equipment: 1. Pump; 2. Hopper; 3. Conveyor; 4. Log washer; 5. Classifier; 6. Drag; 7. Bucket elevator; 8. Belt conveyor; 9. Steam dryer; 10. Screens and bins; 11. Boiler house; 12. Coal silo; 13. Settling ponds; 14. Boxcar; 15. Loading-digging-lifting unit.

made the installation of coal-burning facilities necessary. The steam is kept at 90 pounds pressure. The cost of the fuel for drying is estimated at 40 cents per ton, the coal has a rating of about 9,000 B.t.u. and costs about $7 per ton delivered at the plant.

The plant has a capacity of 200 tons of washed sand per 8-hour shift and the cost of the electric power figures at just a little less than 10 cents per ton of finished product.

Water consumption is approximately 1,200 gallons per minute at plant capacity and the water supply presented one of the major problems. It was desired, if possible, to have the water in closed circuit. The closest source was the Willamette River, about 2 miles distant. Using river water would have meant the laying of an expensive pipe-line and the maintenance of a pumping plant. After intensive study of the ground water conditions, it was discovered that loosely consolidated Willamette River gravel extended underneath the plant site. An adequate water supply was developed with the excavation of an L-shaped pond with a total length of 1,300 feet and a water-storage capacity of 7,000,000 gallons. The gravel, as excavated, was wasted on the plant site proper to form a fill 6½ feet higher than the surrounding land, placing the plant well above danger from floods. In all, approximately 100,000 cubic yards of gravel was excavated and deposited in the fill at a cost of about $15,000.

Although Mr. Lowry believes it is still too early to determine if the Eugene sand can entirely displace that being shipped into the Pacific Northwest from outside the state, the prospects for its continued use are extremely favorable. All analyses prove it equal or superior to the Illinois and New Jersey sands. In carload lots, Ottawa sand sells in Seattle, Portland, and San Francisco for $9.84 a ton. The Eugene sand is being marketed in Portland at $8.75, in Seattle at $9.00 and may be obtained in San Francisco for $9.25. The Eugene plant may be able to lower these prices when greater quantities are sold, as the production costs now are relatively high. Utilization of the by-product clay may aid in this reduction.

There has been considerable interest of late in the western building-materials industry in the development of a remarkable new lightweight mineral known as perlite for insulation purposes and as a lightweight aggregate for concrete. Experiments with this mineral in Arizona were described by Eldred D. Wilson, geologist, and G. H. Roseveare, metallurgist, Arizona Bureau of Mines.

Perlite is a siliceous volcanic glass which, when heated, "pops" or exfoliates into lightweight cellular fragments. Its potential uses have not been fully determined. Two areas are being exploited in Arizona, one near Superior in the southern part of the state and another in the Black Mountains below Boulder Dam just across the Colorado River from California.

The mineral takes its name from the pearly lustre of the best grades, gray in color. Both rotary kilns and flash-type furnaces have been used, the temperature at which it expands ranging from 925 to 1,000 degrees F.

When rotary kilns are used, the material must be introduced from the firing end into the hot zone immediately since preheating the stone destroys its ability to exfoliate. Commercial grades vary from 4½ to 10 pounds per cubic foot but Mr. Roseveare reported that some as light as 1 pound per cubic foot had been produced. Sizing is done by screening the raw material and by air-separation after "popping."

Many questions from the audience went unanswered since several of the experimenters have patent applications pending and the authors deemed it unethical to reveal intimate details of processing procedures just at present.

G. Austin Schroter, geologist and mining engineer of Los Angeles, spoke on *Some Domestic Sources of Mullite Raw Materials.* The United States Bureau of Standards, shortly after the end of World War I was given the task of developing a better spark-plug core for aircraft engines and it was to this fundamental research that industry owes thanks for bringing the mullite refractory to the fore.

The important constituent in the vastly-improved electrical porcelains, so produced by firing intimately-mixed china clay and alumina, was mullite (then still believed to be sillimanite) and a whole new era opened for the American refractory and ceramic industries. The discovery of suitable deposits of minerals from which to form mullite came a few years later.

Broadly speaking, the source of the minerals is in the rocks originating through regional metamorphism, particularly in schistose, gneissic, and quartzite rocks, although occurrences in contact metamorphic zones or fissure veins are by no means unknown. Kyanite, andalusite and sillimanite are the commonest of these minerals and the speaker listed and described the domestic deposits and briefly told of the ore-dressing methods in vogue in their processing.

The speaker was particularly enthusiastic over recent reconnaissance field work in the Gillis and Excelsior Ranges in Mineral County, Nevada, which indicates that commercial deposits of sillimanite-group minerals may be worth developing by those in need of these critical minerals. These andalusite and pyrophyllite deposits have been known to exist only since 1933 and have not previously been described, he said.

Another interesting paper was that offered by J. F. Havard, works manager of the Midland, California, plant of the United States Gypsum Company, who spoke on *Gypsum in War and Peace.*

Particularly interesting was his story of some of the war-time uses of his company's product. Gypsum board was widely used for many war-time structures, one of the largest orders being for use at the Hanford, Oregon, atomic-bomb project, largely for the building of housing for workers. Large quantities of gypsum board were crated and shipped overseas.

During World War I, gypsum-board first won recognition although the product of those days was crude compared with that being manufactured today. After several disastrous barracks fires due to the flimsy, inflammable construction materials used, the army took over the entire output of gypsum board for its construction needs and the artisans and builders who used it quickly recognized its superior qualities and initiated its peacetime expansion in the 1920's.

From a research and production standpoint, Mr. Havard said, the outstanding achievement in gypsum-board fabrication during the war just ended was the development of a marine board for bulkheads in ships. This is a ¾-inch laminated board with a waterproof core and steel exterior sheeting. As the ship-building program draws to a close, this new marine board is presently being used in large quantities to convert ships into transports for bringing our fighting men back home. Approximately 55,000 square feet was used in converting the Italian luxury liner *Saturnia* into the largest American hospital ship, the *Frances V. Slanger.*

"With new techniques developed. production speeds increased and research stimulated during the war years, the gypsum industry," declared

Mr. Havard, "returns with confidence to its peacetime roles. It will contribute the versatility of its unique industrial mineral to the better world we strive to build."

The Use of Borax With Metals was the topic of George A. Connell, technical director of the Pacific Coast Borax Company, Los Angeles. The scarcity of chromium, vanadium, tungsten and molybdenum during the war as hardening alloys in steel was partly met by the substitution of elemental boron. While the results were satisfactory, the cost of introducing boron into steel is still relatively high. However, Mr. Connell's company has sponsored a fellowship at Carnegie Institute and work under way seems to indicate that ordinary borax, either in its pure form or in a semi-refined state may be utilized for this purpose. Aluminum pellets, formerly used in the manufacture of rimmed steel, have been replaced to some extent by a semi-refined borax product known as "Rasorite". First tried because of the shortage of aluminum its use is being continued because of several chemical advantages.

Other uses of borax with metals, such as the enameling of steel, the recovery of scrap metals and the casting of metallic magnesium, were mentioned and described by the speaker.

In a paper entitled *The Economics of Heavy Chemical Production with Special Relation to Phosphates,* Fred C. Bowman, director of research of the A. R. Maas Chemical Company reminded his listeners of the great contest that has been going on for generations in the chemical world between two ideals . . . that of (1) requiring quality first, and (2) producing as cheaply as possible at a sacrifice of quality. Neither is theoretically superior, in his opinion, nor is there a moral problem involved. He developed the thesis that "quality first" is winning in phosphates as it has in other lines. Mr. Bowman said in part:

"There is in all the world only one important raw material for phosphates, i. e. phosphorite or calcium fluophosphate. I am not forgetting apatite or aluminum phosphate, for I have used both, but neither is now on the American market and probably not anywhere. Phosphorite, this absolutely essential mineral, is mined in huge tonnages, worked up by about the cheapest chemical process known and sold to millions of farmers as fertilizer. Do the manufacturers make money? Traditionally they do not. I have collected financial data on the earnings per share for the five pre-war years for heavy chemical manufacturers *versus* fertilizer manufacturers. Of the former, not one company ever showed a deficit; the latter showed deficits about half the time. The former earned on an average $4.68 per share per annum; the latter, 19c.

"Clearly something is wrong; as I see it, two things. It does not pay to get the cheapest of everything, regardless of quality and selecting customers who are usually broke does not pay either. The highest technical skill cannot overcome these handicaps."

A paper on *Saline Deposits of Lake County, Oregon,* prepared by Ira S. Allison of Oregon State College, and Ralph S. Mason of the Oregon Department of Geology and Mineral Industries, was read by George Nielsen in the absence of both co-authors.

The paper described three saline lakes—Summer, Albert, and Alkali—all located within a 25-mile radius which were sampled and examined in September, 1944. Salt, soda and a trace of borax were discovered upon analysis and there is evidence to believe that commercial recovery may be feasible.

September Construction Figures Show Steady Rise

Construction volume in the 37 states east of the Rocky Mountains continued to mount in September. Outlays for construction involved in contracts awarded during the month were 5 per cent. above August and 58 per cent. above September of last year, according to tabulations of individual project contracts reported today by F. W. Dodge Corporation. The total valuation of September contracts was $278,262,000.

Nonresidential construction featured the month's activity, with substantial gains over the previous month and over September, 1944. About 95 per cent. of the nonresidential awards were for private accounts, only $8,511,000 of a total of $181,033,000 being classified as publicly-owned. The September record for private nonresidential construction continued to sharpen the trend from publicly owned projects characteristic of the war years. The record for the first nine months of this year shows 57 per cent. of all nonresidential construction was for private accounts compared with only 25 per cent. during the corresponding period of 1944.

Residential construction in September continued at the August level, with a total of $42,580,000. This volume was 74 per cent. above that reported for September 1944.

● Correspondence

The Editor: Referring to the article by "Portland" in your September issue entitled *Theory and Practice of Rotary Kiln Operation in the Manufacture of Portland Cement,* it appears that the author in calculating heat losses employs mean specific heat values over a considerable temperature range. It appears also that it is intended to carry out these calculations with a high degree of accuracy since, in one instance at least, the figures are extended to two decimal places. Ordinarily, the method of calculation would be acceptable where results are reported in round figures, but in the present case it is suggested that more accurate means could well be employed.

For example, in computing the heat loss in 350 pounds of clinker from 450 to 65 degrees F., the figure of 33,688 B.t.u. is reported, whereas if we calculate this loss from data established from investigations by White and Schwiete, generally accepted as authoritative, the following figures apply:

Heat in 1 lb. clinker at 450° F. (datum 32° F.) 84 B.t.u.
Heat in 1 lb. clinker at 65° F. (datum 32° F.) 6 B.t.u.
Heat lost in 1 lb. clinker, 78 B.t.u.
Heat lost in 350 lb. clinker, 27,300 B.t.u.

a difference in this item alone of 23.4 per cent.

The example cited illustrates the unreliability of specific heat values selected at random from the usual engineering handbooks and also confirms what Steinmetz had to say about carrying calculated results to an unwarranted extreme beyond the accuracy of the fundamental data upon which the calculations are based.

A. W. Catlin

● Freight Car Loadings

Freight car loadings of cement in the fourth quarter of the current year are expected to be 19.5 per cent. higher than in the corresponding quarter last year, according to preliminary estimates compiled by the 13 shippers' advisory boards.

On the basis of these estimates, freight car loadings of cement will total 106,061 in the fourth quarter of 1945, compared with 88,767 actual car loadings for the same commodity in the corresponding period last year.

Theory and Practice of Rotary Kiln Operation in the Manufacture Of Portland Cement

By "PORTLAND"

Part IV

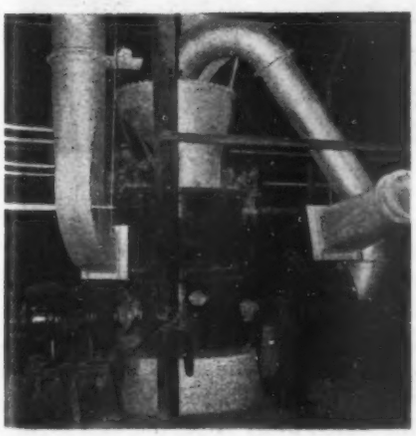
WE have endeavored for a number of years to provide a uniform coal feed to our kilns, but like the feeding of dry raw material this has presented many problems. Since the coal supply is the source of heat it is very evident that it must be uniform and under control. With the individual unit pulverizers that we have installed on our kilns, we believe we have solved the problem of uniform coal feed.

There are a number of factors that affect the rate of heat liberation in the burning zone. The most important considerations are:

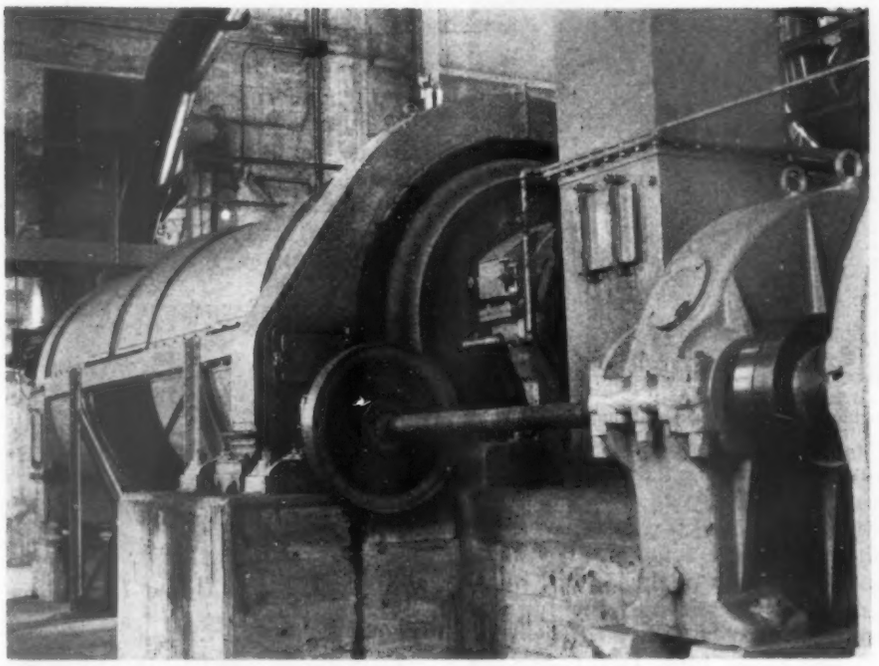
(1) Weight of coal delivered per minute.
(2) Ratio of primary and secondary air.
(3) Temperature of both primary and secondary air and the intimacy of the mixture of primary air and coal.
(4) The velocity with which the primary air and coal is blown into the kiln.
(5) Fineness of pulverized coal.
(6) Dryness of pulverized coal.
(7) Proportion of volatile matter to fixed carbon in the coal.

Primary air is the air that is mixed with the coal and blown into the kiln through the coal or burner pipe.

Secondary air is the remaining portion of the total air required and is admitted to the burning zone through the discharge end of the kiln or through the clinker outlet openings and coolers.



Bowl type of direct-firing coal mill.



Air-swept tube mill used for direct firing of cement kiln.

Burning Zone Before discussing the effect of these various factors, let us consider what is required in the burning zone. As stated previously in this article, combustion is simply the rapid chemical combination of oxygen with the carbon and hydrogen compounds in the coal, with a consequent liberation of heat. In order to take full advantage of the length of the kiln, it is desirable to have this heat liberated in as short a length of the kiln as possible. This of course has the effect of making a very hot zone. Just how rapidly combustion should take place and how short this zone should be, must be controlled by what the kiln lining will stand. If combustion is too rapid, the local temperature will be too intense, and the kiln scale will be melted and washed off the brick lining and then the lining will be melted. This does not mean that there is too much heat liberated in the kiln, but simply that it is liberated in too short a section.

The flame should not impinge on the brick lining, as this is not only hard on the lining but there is a tendency to lower the temperature of the flame before combustion is complete. The flame that is seen in a kiln is a mass of highly-heated gas in a state of combustion. The reason for its visibility is due to the heating to incandescence of the *unconsumed* particles of combustible matter. The variation in color is due to the difference in temperature of these particles. The hotter the flame the whiter it becomes. Let us now return to the seven chief points that affect the rate of heat liberation in the kiln.

Rate of Coal Field 1. The first point relating to the weight of coal delivered per minute requires no comment other than that the supply should be constant.

Air Ratio 2. The second point is one on which there is not complete agreement, and there is no fixed ratio that is universally adopted in kiln practice. If it were possible to mix all the highly-heated air from the coolers with the pulverized coal, and blow it into the kiln, it would not be desirable, as combustion would be almost instantaneous

and the concentration of heat would be too great. On the other hand if the coal were injected into the kiln by some mechanical means other than

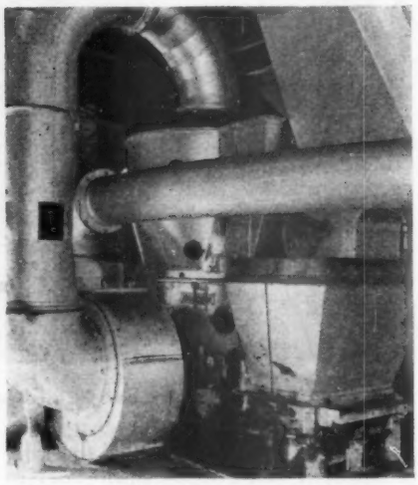
Impact type of direct-firing coal mill.

an air stream, it is likely that ignition would be delayed and the flame would not have good form. We have then to choose some proportion of the *total air* for mixing with the coal and delivering it into the burning zone. This proportion varies between 15 and 40 per cent. Twenty-five per cent. primary air would probably be good average practice.

In our unit pulverizers we require considerable hot air for drying the coal and conveying it out of the mill. This air has of course to be blown into the kiln with the coal. Usually the amount of this air is so great that it cannot all be taken from the coolers or end of kiln without dilution with cold air, on account of the high final temperature. Considerable dilution is usually required when the mill is handling dry coal. In this case it would appear to be more economical to operate with a lower primary air volume, as any cold air introduced with the fuel represents a certain loss. Every pound of cold air drawn from the atmosphere to reduce the temperature of the air going to the coal pulverizer means just that much less air is drawn into the kiln by way of the coolers. And of course it is desirable to draw the maximum amount through the coolers, not only to reclaim heat, but also to cool the clinker for mechanical and operating reasons.

The function of the primary air, other than transporting the coal into the kiln, is to separate the coal particles and surround them with oxygen so that combustion will be started very early after the coal stream leaves the end of the burner pipe. Once combustion has started it progresses very rapidly, and the hot secondary air that has come into the kiln from the clinker coolers supplies the remaining necessary oxygen to complete the combustion.

Air Temperature 3. High temperature secondary air represents a distinct saving, since it is obtained by heat from the clinker that would otherwise be lost. The temperature of the primary air, the intimacy of the mixture of this air and the pulverized coal, the fineness of the coal, and its percentage of volatile matter, all have a very marked effect on the rapidity of ignition. Just as soon as the coal



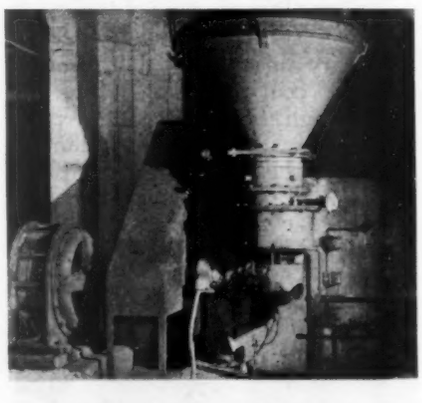
Air-swept attrition-type direct-firing coal mill.

reaches its ignition temperature, combustion will commence. It naturally follows then, that if the air enters the kiln with an initial high temperature that less heat is required to bring it up to the ignition temperature and consequently less time will elapse before the coal bursts into flame. If the primary air became too hot it is probable that the coal would commence to burn too close to the end of the coal pipe or in fact inside the coal pipe. The speed at which combustion progresses is spoken of as "the rate of flame propagation." It is conceivable that the primary air temperature could be raised high enough so that the coal would ignite, and if the rate of flame propagation were higher than the velocity of the air in the coal pipe, then flame might travel back to the coal mill. In actual practice however the air temperature in the coal pipe is kept well below this point. Most manufacturers recommend that a temperature of 160 degrees F. be not exceeded. It has also been suggested that too high a temperature might cause a certain amount of distillation of the coal to take place, and that tars might be deposited in the coal pipe, or coal mill. This of course depends upon the amount of volatile matter in the coal. As a general statement, however, for high thermal efficiency the temperature of the air and coal mixture in the coal pipe should be kept as high as possible.

Velocity 4. The velocity with which the coal is blown into the kiln has a certain bearing on the location of the burning zone. A high velocity also has some effect on keeping the flame away from the end of the coal pipe. This problem of keeping the flame away from the end of the coal pipe is controlled chiefly by velocity and temperature. If the zone around the end of the coal pipe is hot, then the secondary air will also be hot, and if coupled with this the primary air has high heat, then the coal ignition temperature is reached almost instantly on leaving the coal pipe, and a very high velocity will be required to keep the flame away from the nozzle. A high-volatile coal and one that is finely ground will naturally tend to ignite close to the nozzle.

Modern practice seems to indicate that a nozzle velocity of from ten to thirteen thousand feet per minute is satisfactory. It is this velocity and the volume of primary air used that determines the size of the nozzle in the end of the coal pipe.

Various designs of double and single coal pipes have been developed, and certain claims made for



Ball-bearing type direct-firing coal mill.

individual designs. With the double coal pipe, a collar of *cold* air may be blown around the coal stream as it emerges from the inner nozzle, and may have the effect of retarding ignition, and consequently keeping the flame away from the end of the burner pipe.

Coal Fineness 5. The question of coal fineness is of considerable importance in cement kiln operation. The fact that the particles of coal must completely burn in *suspension* and not drop on the clinker makes it necessary that all the particles be fine. Once a coal particle leaves the nozzle—no matter what its horizontal velocity—it is acted upon by gravity and commences to fall. In a vacuum, it would fall 16 feet in the first second and in two seconds it would fall 64 feet. In actual practice there is a certain atmospheric resistance and there may also be upward air currents, so that the coal particles may not fall at this rapid rate. The distance that a coal particle has to fall in a rotary kiln, however, is very small, so that if it is to be completely consumed in suspension it must be very minute.

In pulverized fuel it is not only necessary to have a high percentage passing a 100- or 200-mesh screen but also to have a high degree of fineness in the percentage that does not pass. As stated previously the coarse particles may fall on the clinker before they have completely burned, with a resulting loss in heat units. In boiler practice the coarse coal particles fall to the bottom of the furnace, and this is spoken of as the carbon loss. It need only be a very small percentage for, considering the great volume of coal burned in a kiln, the loss from this source might be appreciable.

Coal Dryness 6. The dryness of pulverized coal, and air requirements of pulverizer: Coal is dried for three chief reasons. First, so that it can be pulverized; second, so that it will burn readily in the kiln; and third, so that it can be stored and drawn from a storage tank. This latter reason disappears now that we are installing unit pulverizers. In almost any type of coal pulverizer that is not air swept with hot air, it is necessary to remove most of the moisture from the coal, otherwise the mill may become clogged. In our later units that both dry and pulverize, the moisture is taken up by the hot air that is either drawn or forced through the mills. All the internal parts of the mill become heated so that the coal, even if it does come into the mill with a high degree of moisture, does not build up on these parts. With the coal driers that were formerly used the moisture was actually removed from the coal, while in the hot-air-swept unit pulverizers the moisture is taken up by the air and is blown into the kiln along with the coal. The overall economy is approximately the same in either case, as it takes a certain amount of heat to vaporize the water, and it does not matter where it is applied, whether in the pulverizer, drier or kiln. It might be thought that there is a loss in raising this moisture-laden air to the temperature of the burning zone, but this heat is again given up in passing through the kiln. It is the kiln-exit temperature that is the chief indicator of the heat loss.

A certain amount of water vapor or steam entering with the coal does not appear to affect the flame, in fact steam is used in some cases to inject fuels. It must, however, be carried by the air and not as surface moisture on the coal particles.

Perhaps the effect on pulverized coal carrying too high a percentage of surface moisture would be that the finely-divided grains would have a tendency to cling together and form small pellets. This would, of course, retard combustion, and would have the same effect as coarse grinding.

Steam at atmospheric pressure is defined as water vapor above 212 degrees F. Water vapor can exist, however, at temperatures much below 212 degrees. All atmospheric air is mixed with a certain amount of water vapor, provided there is water present, and the amount of this vapor depends on the temperature of the air. The higher the temperature, the more vapor will be present and, if the temperature is lowered, some of the vapor will condense back to water. The point or temperature at which this would take place is called the dew point. When air is mixed with the maximum amount of water vapor that it will carry at a given temperature, it is said to be saturated. It is not always saturated, however, and the degree to which it is saturated is called its per cent. relative humidity.

Heat must be added to water to cause it to vaporize. This heat becomes latent in the water vapor, and is not all represented by an increase in temperature. In a unit pulverizer one of the functions of the hot air supplied is to provide the heat necessary to vaporize the surface moisture of the coal. Water vapor has a definite latent heat of vaporization at different temperatures and the lower the temperature the higher the latent heat. At 212 degrees F. 970 B.t.u. is required to vaporize one pound of water, but at 170 degrees, which is an average figure for the exit temperature of the air and coal from a pulverizer, about 1,000 B.t.u. per pound of water is required. Now the available heat for use in the pulverizer is represented by the drop in temperature across the mill or in other words, the difference in temperature between the inlet and exit air. As the percentage of moisture in the coal increases, more B.t.u. per pound of coal will be required in the mill. Within certain limits this additional heat can be supplied in two ways, either by increasing the weight of air per pound of coal ground, or by increasing the temperature of the inlet air. Whichever is done, enough B.t.u. must be supplied so that the exit temperature will not fall below, say, 160 degrees.

In addition to supplying enough B.t.u. to the mill, it is also necessary to use a sufficient weight of air so that the humidity of the exit air will be well below its saturation point.

If the weight of inlet air to a pulverizer is fixed, the effect of increasing its temperature, to accommodate an increase in coal moisture, would be to raise the humidity of the exit air. Theoretically this could be carried out until 100 per cent. humidity was attained, but practically this might be difficult, as the air is not in contact with the moisture for a long enough time in the mill to take on all the water vapor it could carry. It is then clear that the *weight* of the air used per pound of coal must be *increased* when the moisture content becomes excessive. If we assume a certain percentage of humidity in the exit air, and fix the temperature, we can calculate the weight of air required per pound of coal having a given percentage of surface moisture. It should be noted that it is the temperature of the exit air that controls the amount of moisture that is carried out of the pulverizer. Almost any good hand-book will contain a table giving the moisture-carrying capacity of air at different temperatures. The figures given will of course be for 100-per cent. humidity. Fifty-or 60-per cent. humidity would probably be a safe figure to use.

Pressure as well as temperature is, of course, an important factor when considering the moisture-carrying capacity of air, but in all our discussion it is assumed that atmospheric pressure prevails. This is not strictly true, but is a close enough approximation.

In addition to having what might be called the thermal function, the air has also a mechanical duty to perform, and that is to carry the pulverized fuel out of the mill. If

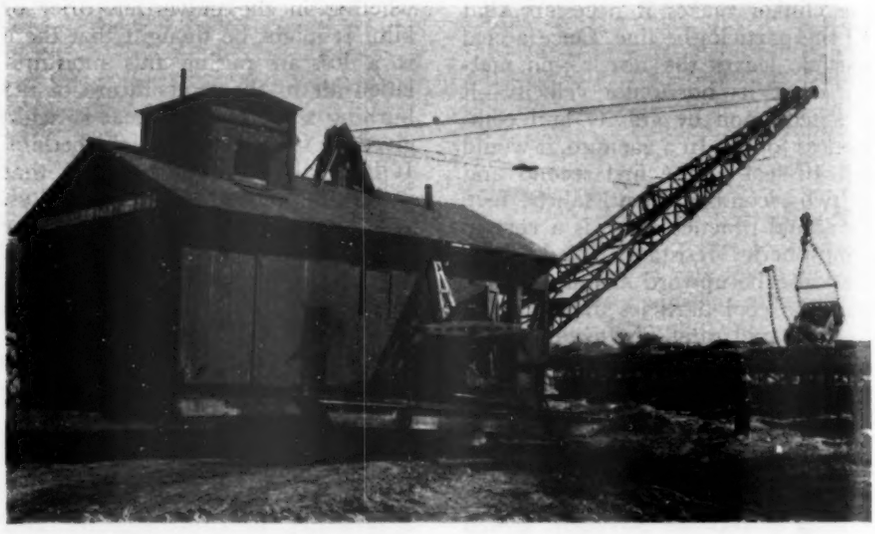
(*Continued on page 95*)

GIFFORD-HILL OVERCOMES OBSTACLES IN MAKING SUITABLE ASPHALT FINES

another ON THE SPOT report

IN 1938 Gifford-Hill & Company, Inc., decided to expand its operations near Texarkana, Texas, by producing asphaltic concrete. The plans called for the development of a small crushing and screening plant to reduce oversize (plus

By WILLIAM M. AVERY



The 2½-cu.-yd. walking dragline used to load gravel into cars at pit.

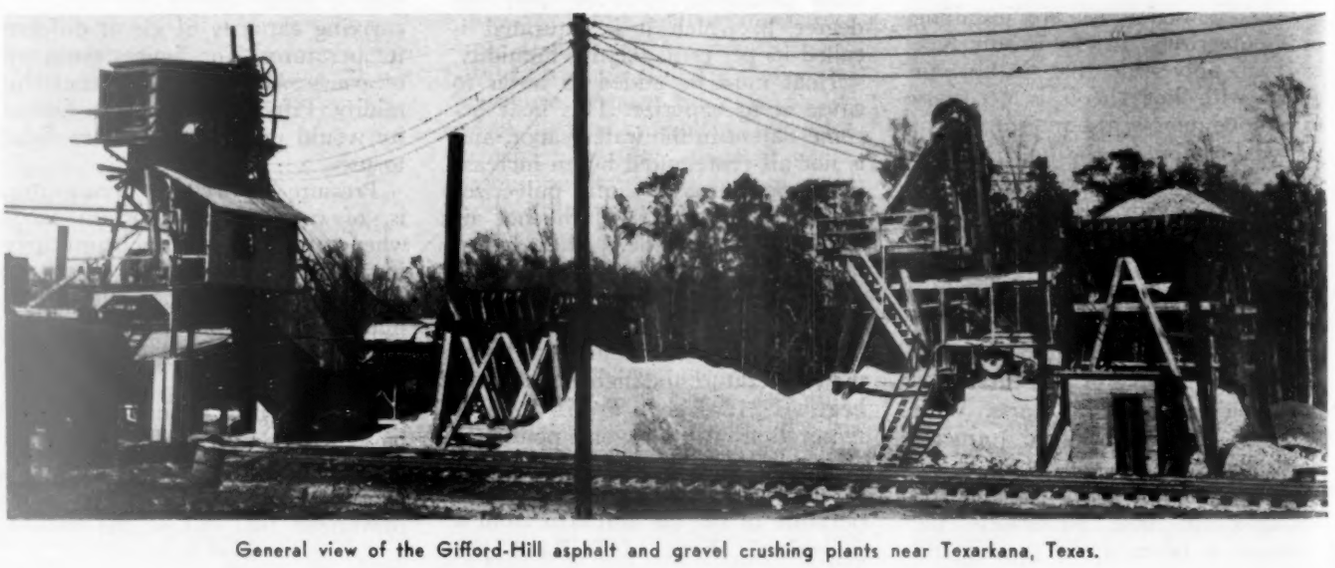
1½-minus 3-inch) material produced at an existing plant to the minus-½-inch size preferred in asphaltic concretes. The material, a glacial deposit consisting of a mixture of clay, sand, and gravel, had resisted previous efforts at crushing in volume by the simple expedient of persistently choking the crushers used. Jaw, roll and gyratory crusher had all been tried out at one time or another, and the only redeeming quality found in the material was the complete impartiality with which it resisted all types and makes of equipment.

Earlier attempts had seemed to indicate that the gyratory-type crusher might have a shade of advantage over other types and the new plant was accordingly equipped with a gyratory crusher. Despite the very best efforts of all concerned, production with this unit could not be made to exceed 10 tons per hour, and it became clearly evident that some better solution must be found if the project was to continue.

About this time the Stedman disintegrator was suggested as a possible solution to the choking problem, and although it had little or no previous experience with this equipment in gravel plants, the company felt it was time to make an altogether fresh start. A 36-inch single-cage disintegrator was accordingly purchased and installed at the plant late in 1938. Choking and flooding at the crusher ceased to be a problem and production jumped encouragingly to about 25 tons per hour. A second disintegrator was purchased and installed in 1941 as a secondary crushing unit in series with the first. The fallacy of this arrangement was evident almost at once, for the primary unit kept the secondary covered up most of the time, and parts in the secondary wore out at about twice the rate of corresponding parts in the primary machine. When the machine were reinstalled in parallel these difficulties were automatically eliminated and production was increased about 30 per cent.

In the relatively simple arrangement of equipment which has been developed, the Stedman disintegrators, mounted side by side on a single concrete pier, are fed by a 30-inch by 11-foot Link-Belt pan conveyor which is under a timber hopper of about 14-cubic yard capacity. The raw feed is brought from the primary sizing plant in open-top cars and unloaded into stock-piles. A 1½-cubic-yard clamshell crane loads rock into the hopper from these stock piles.

The feeder operates at the rate



General view of the Gifford-Hill asphalt and gravel crushing plants near Texarkana, Texas.

of about 7 feet per minute, and every effort is made to maintain a 10-inch layer of material at the discharge end, where the flow is split between the two disintegrators. A 50-horsepower constant-speed motor, driving through seven V-belts whirls each cage at about 750 m.p.m. In order to equalize somewhat the rate of wear on the 3-inch-thick plates inside the machine, the direction of rotation is reversed from time to time. The size of product can be controlled to some extent by changing the speed of the disintegrators, but once the optimum speed has been determined there should be little occasion to vary it.

The crushed rock drops from the disintegrators into a bucket elevator which discharges onto a 3½- by 6-foot double-deck "Cedarapids" vibrating screen. The upper deck, which has 1-inch-square openings, is used only as a wearing surface, and the actual sizing is determined by the ½-inch-square openings in the bottom deck. All plus-½-inch rock flows through chutes back to the disintegrators for further reduction, while the minus-½-inch finished product is stored in an open stockpile under the screen. Under normal conditions the circulating load is approximately 50 per cent. of the total load.

The HD 36-inch disintegrators are rated at 30 tons per hour each. In this installation, the combined output of the two machines has remained about 50 tons per hour almost without regard to operating conditions. The wearing plates have shown an average life of 150 hours, while a new cage may last from 100 to 120 hours. With manganese steel again available, it seems certain that these figures will rise sharply.

It is the company's policy not to stock-pile crushed rock more than a few days in advance of current needs for the moisture content of the fractured material rises very rapidly. As it comes from the pits, the rock contains not over 3 per cent. moisture, and it is generally necessary to use some water at the disintegrators in order to keep down the dust. The crushed material is dried in a Warren Brothers 56-inch- by 20-foot oil-fired rotary drier before going to the asphalt plant. Here a 30-inch by 12-foot rotary screen is used to separate the material into three primary sizes, which are then placed in 4-cubic-yard dry-aggregate bins above the plant.

With this equipment Gifford-Hill has been producing up to 20,000 tons per year of asphalt mix, and selling it far and wide for use in pavements, driveways, parking areas and walkways. The Warren Brothers asphalt plant is built over a railroad siding

A. L. Farr, superintendent of the Texarkana plant.

and most of the shipments are made in cars. The plant is now located about 9 miles due south of Texarkana and just over the Arkansas line, at the Jury Siding of the Texas-Pacific, and Kansas City Southern railways. In the recovery end of the operation, 12-cubic-yard Austin-Western side-dump cars are loaded by Monighan dragline with a D13,000 Caterpillar diesel power unit and a 2½-cubic-yard Hendrix dragline bucket. A Koehring 501 gasoline-powered 1½-cubic-yard dragline is used for loading railroad cars at the plant.

A. L. Farr is superintendent of this plant which is one of the eight operated by Gifford-Hill & Company, Inc., throughout Texas and Louisiana.

Rotary Kiln *(from page 93)*

the volume of air is too low, the mill will fill up, and if it is too great, the velocity through the mill will be too high and coarse coal will be drawn out. Different types of mills vary in respect to the volume of air that can be drawn through them.

Volatile Matter 7. The proportion of volatile matter to fixed carbon in the coal. The bituminous coal that is commonly used in cement kilns carries a certain amount of volatile matter, ranging from 20 to 30 per cent. This volatile matter consists chiefly of hydrocarbons such as methane, ethane, ethylene, and etc. When the coal is heated to a certain temperature these gases are liberated, or what is generally termed distilled off. The temperature at which this takes place is generally below the ignition temperature of the coal. Since the fuel used in a cement kiln must burn in suspension, it is necessary that ignition and combustion take place very rapidly. The gaseous combustible matter will naturally combine with oxygen and burn more rapidly than the particles of fixed carbon. The heat liberated by this combustion will tend to maintain the high temperature necessary for the rapid combustion of the carbon particles with oxygen.

Before the introduction of unit pulverizers and the use of hot air for conveying the powdered coal into the kiln, a fairly high volatile coal was necessary to promote rapid ignition. There is probably also another factor that made this necessary, and that is, that the primary air and coal were not intimately mixed. Very much of the coal was blown into the kiln in a dense mass, with the result that time was required for the air in the kiln to mix with the coal.

With the use of hot-air-swept mills this condition has now been changed. The primary air and coal is very intimately mixed, and the mixture enters the kiln with a fairly high initial temperature which, of course, will mean that less heat will have to be taken on to raise the coal to its ignition temperature. It is therefore probable that with these changed conditions, coal having a much lower volatile matter content could be used successfully. Anthracite fines or coke screenings might be mixed with the usual run of bituminous coal. This has been done in the past, but an even larger percentage might be used with our new type of mills.

We have made very marked improvements in kiln operating efficiency in the past ten or fifteen years, but as stated earlier in the article, there is yet need for further improvement. The overall thermal efficiency of cement kilns in general is still very low.

THE END

At Vienna, Illinois, a new crushed-stone and agricultural limestone plant has been put in operation by its owners, J. L. McElroy and R. O. Wantland. The product is now being shipped to Carmi, Illinois.

New System and Electrical Devices Improve Blasting Efficiency

By WILLIAM M. AVERY

In a typical blast using the new method the toe of the face moves out first.

This view shows the excellent breakage obtained in blast pictured at left.

another ON THE SPOT report

SHOVEL output up 30 per cent., secondary blasting down 30 per cent., material reduction of back-break and trebling of the number of holes shot in a single blast without complaint due to vibration—these are the remarkable results reported by some of the large quarry operators in the northern Ohio field who have used the new Rockmaster system of blasting developed by the Atlas Powder Company. The first important post-war development in blasting technique announced so far, the Rockmaster system consists of special electric blasting devices which permit the application of an entirely new principle of controlling and utilizing the disruptive force of the explosives' gases. Handling techniques, loading procedures, and the explosives themselves have all been re-examined and specially designed to make possible the new approach to the rock breaking problem.

What It Is Fundamentally the Rockmaster system involves the use of a series of specially designed blasting devices which permit the confinement of the explosives gases for a longer period of time and in consequence brings about a more complete use of the forces than has heretofore been possible.

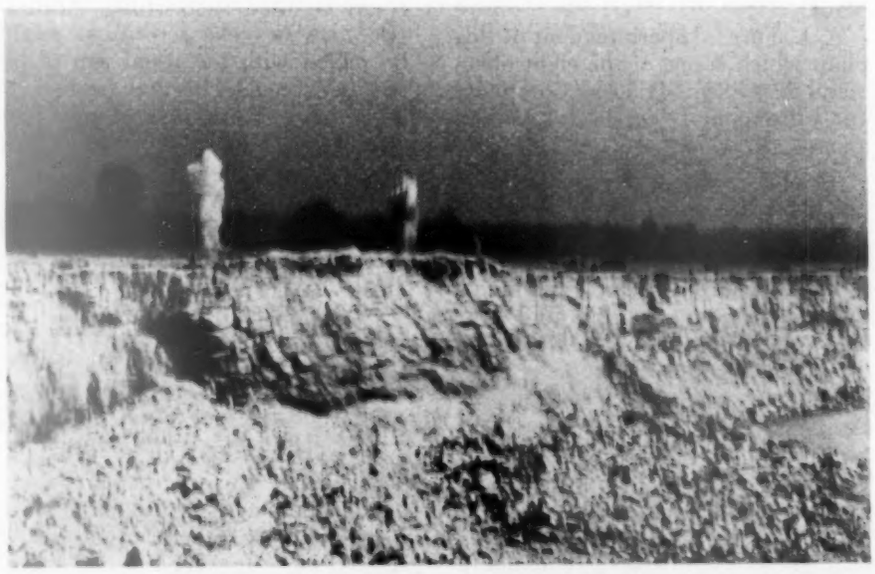
Though it has not always been recognized in the past, a sharp loud report and a large volume of smoke following a blast are in reality clear indications that the gases are escaping without doing useful work. By closely-controlled, delayed action the Rockmaster blasting devices accomplish two important things: first, place the rock under stress, in which condition it is easily broken, and, second, by utilizing the remaining force of the gases instead of permitting their escape to the atmosphere, apply the secondary shock which is necessary for complete fragmentation throughout the burden. The resulting dual or 2-phase action, involving both smashing and shear action, causes stone to break stone and fully develops the natural partings of the rock. As one operator has aptly expressed it, it is a simple application of the old "one-two" principle of boxing to quarry blasting.

What It Does The Rockmaster system of blasting, although its full potentialities have not by any means been fully explored, has so far demonstrated that it can do three very definite things.

1) It increases shovel output due to the fact that fragmentation throughout the burden is not only greater but more uniform than has been possible with the methods formerly used. The improved fragmentation has in several instances reduced secondary blasting almost to the vanishing point in quarries where much secondary shooting had been required.

2) It has made possible the shooting of from 2 to 3 times as many holes without measurably increasing the vibrations and with an actual reduction in concussion and sound.

3) It has permitted the control of back-break, thus simplifying the problems of drilling and loading the next shot.



Better shovel performance in this quarry resulted in part because the new method permitted firing two rows consecutively and gave the shovel a deeper bank in which to work.

Any one of these advantages would in itself constitute an important forward step in quarry blasting. Taken all together they well explain the enthusiastic acceptance the new blasting technique has won in northern Ohio, in the few months since it was first introduced.

Fragmentation In one large Ohio quarry where the initial tests of the Rockmaster system were carried out, poor fragmentation of the high-magnesium limestone had long been a serious problem. In this particular quarry, where exceedingly complete and accurate performance records have been kept, a par of so many tons per hour had been set up for the shovel. Up until July of this year the shovel had actually performed, on this basis, at 92 per cent. efficiency. In the 2 months since the adoption of the Rockmaster system of blasting at this quarry, shovel performance has averaged 119 per cent. efficiency. This means that an actual increase in production of 28 per cent. was achieved.

This increased shovel output was immediately reflected in the tons of rock carried by the trucks from the face to the weighing scale. Previously the allowed 3 passes of the shovel averaged about 11 tons in the trucks. With the better fragmentation the average truck load went up to more than 12 tons with three passes.

A share of the increased shovel performance at the quarry was an outgrowth of the fact that the new system of blasting made it possible for the first time to shoot 2 rows of holes consecutively and thus give the shovel a deeper bank in which to work. Previously, due to difficult toe conditions no other method of blasting had been found that would permit this practice. With the deeper bank now obtained, the shovel frequently loads for as long as 2 hours without moving. Since about 2 minutes are required to load a truck and with a shallow bank it had formerly been necessary to move from 4 to 6 times per hour with a loss of about 2 minutes per shift, it is evident that at least 4 additional truck loads per hour have been gained.

Less maintenance and fewer breakdowns of both the shovel and the crushers have been worthwhile by-products of improved fragmentation at the plant in question. The thorough checking of the rock from the quarry has resulted also in improved yield from the crushers and in a whole series of improved performances throughout the plant which are difficult to measure but clearly apparent to the operators.

This close-up of a blast made with Rockmaster shows clearly the peaks and valleys of the one-two principle. Absence of escaping gases, clearly evident in this photo, partly explains the excellent breakage obtained.

Secondary Blasting Since secondary blasting had always been a major problem at this particular quarry, a powder factor has been set up to give some measure of the secondary blasting required following serious primary blasts. This factor is expressed in terms of tons of rock dug per pound of dynamite used in secondary blasting. The average factor over a period of years had been 40 tons of rock per pound of dynamite. Since the introduction of the Rockmaster system the powder factor has jumped to around 100 tons of rock per pound of dynamite in secondary blasting and it is evident that a further increase is in the offing.

Vibration One of the most irritating and at times most costly problems with which quarry men are faced is that of litigations arising from damage — or perhaps even more often alleged damage —due to blasting vibration. Complaints arising from this cause have increased alarmingly in the past few years, and juries have shown an inclination to award damages upon even the most absurd claims.

Extensive pin tests in the quarries in which the Rockmaster system of blasting has been used indicate that from 2 to 3 times as many holes may be shot by this method without increased vibration. This appears on the face of it to be a by-product of the "one-two" principle involved, since only the initial wave of the blast is recorded as a peak, the succeeding waves being non-cumulative in effect. It should be pointed out here that the delays used in the new system are exceedingly short and in no way comparable with the one-second delays which have been widely used in quarry blasting.

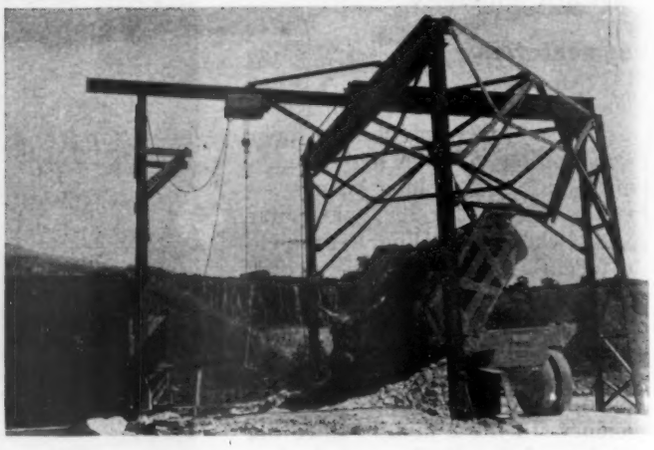
Imaginary complaints resulting from concussion and noise are a source of considerable annoyance in quarries located in or near cities, and all-too frequently their operators are required by law to limit blasts to a relatively small number of holes. The owners of an Ohio quarry, where the Rockmaster system was tried out recently, had been firing but 5 holes because of the frequent complaints resulting from their primary blasts. It was found that a 20-hole blast, using Rockmaster electric blasting caps in combination, produced vibrations no greater than those caused by the firing of 5 holes by conventional methods, and the breakage surpassed any results previously obtained. Both concussion and noise were reduced so materially that residents in the near-by town were hardly aware that a blast had been fired.

Back Break The problem of back break is of primary concern in low-face quarries where 3 rows of holes may be fired simultaneously. Under such conditions the back-break may be so extensive that cracks will extend beyond the cut where it is desired to drill the succeeding 3 rows of holes. Such cracks

(Continued on page 100)

National Stone Co. Uses Combined Truck and Skip Haulage System

The 4-cu.-yd. electric shovel loading one of the two 17-ton semi-trailers.



This photo shows how the dumping mechanism operates. Stone hook is at left.

another ON THE SPOT report

IN recent years quarry operators generally have displayed a rapidly accelerating interest in the subject of haulage and haulage equipment—an interest which has paralleled to a considerable extent the many significant improvements which equipment manufacturers have introduced during the past decade. The war years have served to highlight the serious vulnerability of plants whose operations are necessarily dependent upon outmoded and inefficient haulage equipment, with the result that today haulage methods are probably receiving more critical attention than any other single operating problem.

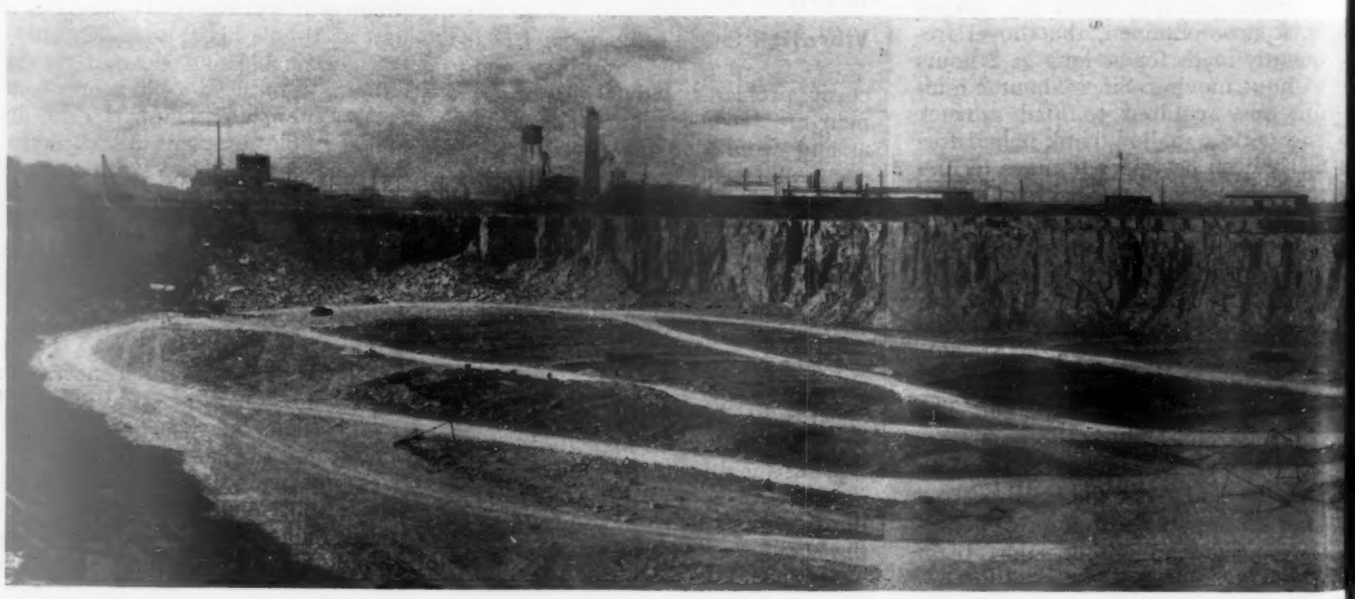
The National Stone Company of Joliet, Illinois, for example, had operated rail cars and locomotives in its quarry since the inception of stone crushing operations 40 years ago. Two gasoline-driven locomotives,

By WILLIAM M. AVERY

each drawing eight 4-ton cars, hauled stone over a circular narrow-gauge track from the working face at one end of the quarry to the hoist incline at the opposite end. The operators had for many years pointed out the advantages that would be realized if they could shoot when and where they wanted to without the constant problem of shifting track or the fear of delaying production, for even with the existing haulage equipment operating without interruption, it was not always possible to feed stone to the crushing plant at the required rate. Of even more immediate concern was the acute labor shortage brought on by the war, making it increasingly difficult to maintain tracks and rolling equipment. The locomotives and cars were over age at the outbreak of the war, and their condition was inevitably aggravated, at first by the absence of experienced maintenance men and in the later stages by the almost complete lack of maintenance attention of any description.

In March of this year the company solved these problems at a single stroke by eliminating track-

Panoramic view of the quarry of the National Stone Company near Joliet, Illinois. Clearly shown are the loading operations at extreme left and the roadways connecting to the plant at extreme right.



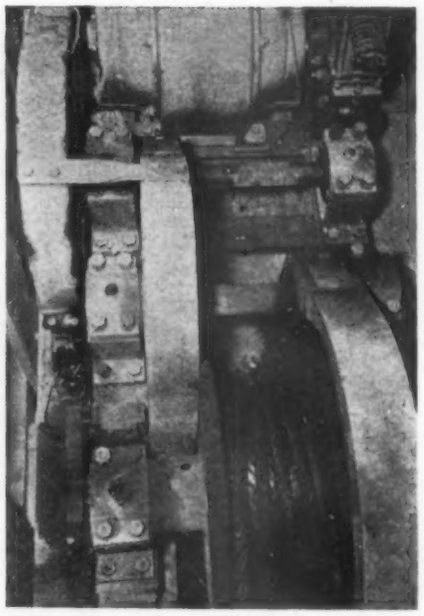
The pan feeder which controls the loading of the skip cars from the truck hopper.

haulage and placing in service two Easton TR-13 semi-trailers with a capacity of 17 tons each. These huge units drawn by International KS-11, gasoline-powered tractors, are moving a total of 240 tons of rock per hour between the present working face of the quarry and the foot of the hoist incline, a one way distance of almost ½ mile. Each trailer makes 7 round trips per hour at a top speed of 30 miles per hour, attained while coasting to the dumping point. The tractors have been consuming fuel at the rate of about 1 1/9 gallons per hour.

The trailers are dumped at the foot of the double-track hoist incline by means of a conventional Easton elbow-type dumping mechanism, powered by a special electric hoist instead of the more frequently used air cylinder. The hoist, which is driven by a 20-horsepower General Electric induction motor, was developed for the National Stone Company by Easton in collaboration with the Lidgerwood Manufacturing Company. A General Electric Thrustor Brake mounted on the back shaft of the motor assures instantaneous stops at both ends or at intermediate points of the hoisting cycle, and the entire operation can be fully automatic or controlled by means of a push button. The complete dumping cycle, from engagement to disengagement, requires only 30 seconds.

F. W. Smith, superintendent.

A Traylor 4- by 12-foot pan-type feeder has been installed under the concrete hopper into which the trailers are dumped in order to control the loading of the 6-ton skip cars. The operator in the control house has a clear view of the truck roadway, the skip-car pit and the hoist incline, and he controls by means of push buttons both the dumping of the trailers and the loading of the cars. The two incline hoists are operated from the plant above, and a visible signal is used to inform the skip hoist tender when a car is loaded and ready to make the ascent.



The electric drum hoist which operates the dumping mechanism.

Delays caused by hang-ups in the hopper above the feeder have been materially reduced by the installation of a large steel hook suspended from a Hi-Lift Northern trolley hoist. The trolley runs on an I beam over the center of the pit, and the small, motor-driven hoist is operated from a landing outside the hoist house. This setup enables the hoist operator to dislodge hang-ups effortlessly in a matter of a few sec-

In this view both semi-trailers are shown at the dumping point. The operation of the dumping mechanism is clearly shown.

onds, as contrasted with the back-breaking, time-consuming labor required when crow bars were used.

With recovery and haulage capacities in balance for the first time in many years, the National Stone Company in a few months has noted an impressive array of operating advantages directly attributable to the recent shift from railway haulage to semi-trailer trucks. Delay time and maintenance cost occasioned by the necessity of relaying track after blasting have, of course, been eliminated altogether, as have also damage to rolling stock and tracks from blasting and costly operating delays due to train wrecks. The big tractor-trailers move in to the working face for loading by the 4-cubic yard Bucyrus-Erie 120-B electric shovel in less than an hour after a primary blast, and in consequence production delays due to blasting are now reduced to the minimum.

With this new system, when the shovel encounters bad digging it is a simple matter to move to another part of the shot and leave the bad section clear for jackhammer and secondary blasting operations. This has brought about a significant increase in shovel efficiency, with the result that loading is now almost continuous. Since the new haulage system went into operation 8 months ago the crushing and screening plant has been operated at peak capacity.

Another factor — one too often overlooked in studies of over-all plant performance — is that the men not only like the new equipment but take definite pride in the smooth and seemingly effortless manner in which material now moves from the quarry to the plant. Their understandable pride has been translated into better working morale; the well designed, efficient equipment they are operating makes their performance look better, and the men inevitably have seen to it that the potentialities of the equipment are fully realized.

With quarry haulage problems solved, W. N. Carter, National Stone's capable president, is now in a position to concentrate his attention on other critical operating problems, and to proceed confidently with the knowledge that he has secured for his plant a steady, assured flow of raw stone considerably in excess of immediate requirements.

Atlas *(from page 97)*

in the formation are undesirable for a number of reasons. They make drilling more difficult and costly because bits tend to stick and break; they slow down loading because the cartridges have a greater tendency to hang up; and they materially increase blasting costs because the explosives may release their gases prematurely through the cracks.

Some quarry operators have tried to solve the problem by using one-second delays in the back row, and the results insofar as back break is concerned, have frequently been very good. Unfortunately, however, it often happens that some of the dynamite in the back row is often cut off from the main charge without being detonated, with this large time interval. In such cases it would appear that the hazard created is more serious than the annoyance eliminated.

The Rockmaster system minimizes the problem of back-break by using "Zero" Rockmasters in the front row, "A" Rockmasters in the middle row and "B" Rockmasters in the back row. The slightly longer delay in detonating the back row assures that the charge will work against a free face, but the delay is so infinitesimal compared with the standard one-second delay that there is little danger of cutting off the back holes. These new electric blasting caps also facilitate the shooting of a double row of holes in those quarries in which back-break had formerly made it impossible.

Limiting Throw In 2-row blasting, where it is desirable to limit the throw of the burden to clear a track, good results have been obtained by using "A" devices in the front row and "B" devices in the back row. Since the energy from the back row of the charge is not applied to the front of the burden, the throw is considerably less and the resulting bank is deeper, making possible more efficient operation of the shovel.

D. M. McFarland, manager of the technical division of Atlas Powder Company, points out that the new principle has not changed any of the basic rules governing good blasting practice. If the maximum results are to be obtained with the Rockmaster system, the explosive must be geared to the method. In short, the selection of the correct explosive and the best combination of burden and spacing of drill holes for a particular formation, and the determination of the proper charge and the distribution of the charge in each drill hole —all of these are just as important as they ever were.

The Rockmaster system has been used on a sufficiently wide scale and under sufficiently varied conditions to establish definitely its importance as a new method in quarry blasting. Mr. McFarland feels that its possibilities have only been scratched so far, and that as experience accumulates in the field even better results will be obtained.

National Sand and Gravel Association Directors Meet

another ON THE SPOT report

WITH their organization's president, Robert Mitchell, directing their proceedings, the board of directors and other members of the National Sand & Gravel Association met at the Palmer House in Chicago on October 18 to discuss problems currently affecting their industry. Important among the subjects listed on the agenda was the question of the 1946 convention, to be held at the Netherland Plaza, Cincinnati, January 22 to 24, 1946, and the policy that should be adopted with reference to subsequent meetings. There was complete agreement on the proposal that conventions with exhibits should be held only every other year, instead of annually as before the war, and that conventions in the other alternate years should be held in different parts of the country where in the past, because of the lack of adequate exhibition space, the association's members could not convene. Under this plan it was decided to hold the 1947 convention without an exhibit of machinery in Los Angeles. The first convention with an exhibition will probably be held in 1948 at a place and time still to be determined.

Executive Secretary Ahearn read a letter from Dr. Marcellus H. Stow, deputy director of the Mining Division of the War Production Board, expressing appreciation of the assistance given to his division by the association during the war.

Mr. Ahearn discussed wages and hours, the effects of these on seamen and scow men, the question of what constitutes compensable time, and other matters relating to employer-employee relations. He said, in harmony with judicial ruling in the matter of portal-to-portal pay, that employers are certain to be held accountable for compensation covering all the time in which employees are under their control or direction, even though they are not working. As an example of compensable time, he cited a case in which a company provided for its workers free bus transportation from a point in a certain city to its plant some distance away. Inasmuch as the men were required to report at the starting point at a definite time for transportation to their work, they were held to be entitled to compensation beginning at that time. Legal responsibility for pay might have been avoided in such a case simply by announcing to the men that transportation would be available and that they might avail themselves of it if they desired to do so, without requiring them to be at any designated place and to make use of the employer's free transportation to his plant.

It was pointed out by Mr. Ahearn that the interpretations of Director Hershey of the Selective Service are valid under the law which established it until overruled by the courts. World War I veterans will be "bumped" from their present positions by veterans of World War II, if the latter insist on having their old jobs, and such supersedure of the former by the latter is legal under the Selective Service Law, which supersedes all union contracts. If the old job of the returning veteran of the last war is not available, he must be given one of equal pay and equal seniority status. Veterans are entitled to a year's work irrespective of plant shutdowns.

The control of building-material prices is expected to be one of the troublesome problems of the post-war period, since producers desire to be freed from existing regulations, while the Office of Price Administration believes that a continuation of control is essential if skyrocketing of prices is to be avoided. The construction industry is looked upon as the means of providing a cushion against unemployment during the reconversion period, and it is, therefore deemed unwise by the O.P.A. to remove present controls on construction-material prices and then impose a general price order.

After a luncheon at which those in attendance at the meeting were guests of the association, Mr. Ahearn introduced William Pringle, recently appointed Chief, Mason Materials and Refractories Section, Building Materials and Construction Price Branch of the Office of Price Administration. During the open-forum discussion of O.P.A. problems it was noted that the sand-and-gravel industry is no longer under MPR 188, but is covered by a new regulation—MPR 592—which became effective on August 1, and which was specifically designed to take care of the building industries.

Mr. Pringle's answers to the many both general and specific questions which were asked concerning O.P.A. outlined the principles and procedures involved in applications for price relief. Individual producers may at any time make application for price increases, but in general industry-, area- or district-wide applications are to be preferred in order to avoid the inequalities that inevitably occur when each producer is handled individually. Several producers in an area may request an area study with a view to obtaining price relief, and applications concerned with area relief should, at least for the present, be sent to Washington rather than to the district office concerned.

The law prescribes within fairly narrow limits the amount of relief which the O.P.A. may grant. If present profits are more than 115 per cent. of the 1936-to-1939 base period plus adjusted net worth, only the increase in manufacturing cost can be granted. If profits are between 100 and 115 per cent. of the base period plus adjusted net worth, the entire increase in cost may be granted. If they are less than those of the 1936-to-1939 period, relief can be granted only to the extent of restoring them to the base-period levels.

There was some discussion of the problem confronting ballast producers who need price relief before submitting bids, but lack complete cost figures for the current year with which to support an application for price increases. It was brought out that in such cases the O.P.A. annualizes figures covering the period for which data are available.

Stanton Walker, director of engineering, reported in considerable detail on the status of research projects now in progress in the association's laboratory at the University of Maryland. Studies of the resistance of concrete to freezing and thawing as affected by aggregates are still in progress, and Mr. Walker commented on the considerable amount of time—*i.e.*, man-hours—consumer by an investigation of this type. Among the interesting facts disclosed so far is that the presence of shale and soft particles in quantities up to as high as 10 per cent. does not materially affect the durability of concrete.

Mr. Walker mentioned the desirability of an early extension of some of the laboratory studies into the field with the building of experimental roads. In this connection he disclosed that some laboratory specimens had by mistake been oven-dried before vacuum saturating.

Under freezing and thawing these specimens failed almost at once, suggesting strongly that drainage may prove to be the key to pavement durability. Several sections of experimental road are now old enough, he said, to justify drawing some conclusions, and particularly to indicate the extent to which laboratory findings may be relied upon.

Studies are now in progress of the relative strength of concrete made with various aggregates, particularly with regard to flexural strength. Mr. Walker feels that in the past too much importance has been attached to the compressive strength of concrete and too little to other properties which bear more directly upon the actual performance of the material in service.

In connection with sand grading, Mr. Walker told the meeting that a large part of current production is not in line with specifications. Of 214 widely distributed sources studied, 61 per cent. showed average analyses of less than 2 per cent. retained on the 100-mesh sieve, and 50 per cent. were found to produce material with a fineness modulus higher than 2.9. Additional studies are necessary, Mr. Walker said, and one of the industry's important problems is to find means of bringing production within the specification limits.

According to Mr. Walker, almost all specifications covering bituminous mixtures now include sand and gravel and he feels that the subject of bituminous mixtures has become of sufficient importance to justify a thorough study in the laboratory. He suggested that the association's next research fellow might well devote time to such a study.

Victory (from page 73)

specified when no further joint stipulations will be received, the board will act only to the extent of designating, at the request of the parties, an arbitrator or arbitrators as the parties may specify, to make a final and binding decision, and will not itself make the decision.

5. Staff aid will be given to the regional boards and commissions which have the most congested calendars, by appropriate transfers from the National Board or from other regional boards or commissions, as particular case loads may permit.

6. There will later be announced a program for carrying out the functions required under the Stabilization Act (passing upon such voluntary wage adjustments as require approval, and acting upon violations of wage stabilization regulations) until the termination of that act.

On October 19 the National War Labor Board unanimously amended the above statement to provide that:

1. In pending cases not voted on prior to October 22, where the parties subsequent to October 22 stipulate to be bound by a directive order of a board agent, the agent may issue such an order after October 22. The stipulation, however, must provide that board agent's decision is final and that review by national board is waived.

2. Where interim order on some issues of a case was issued prior to October 22 and some issues of same case were referred to parties for negotiation or board agent failed to act on such remaining issues prior to October 22, they may be disposed of by directive order after October 22 if parties jointly request such disposition. If parties do not agree, issues should be disposed of by recommendation of board agent excepting that where such agent believes different disposition of remaining issues would be unfair to any party it may make a full report thereon and request the national board for permission to issue directive order.

3. Where, prior to October 22, a board agent issues a notice to show cause returnable after that date why arbitration or other proceedings or actions should not be "ordered" its action subsequent to October 22 should not take the form of an order but a recommendation.

WAR PRODUCTION BOARD DISSOLVED.

—Following the announcement by President Truman of his acceptance of the resignation of J. A. Krug, Chairman of the War Production Board, effective November 3, and of the dissolution of W.P.B. on that date, J. D. Small, newly named Administrator of the Civilian Production Administration, which will succeed the W.P.B. outlined on October 4 the functions of the new agency.

"The Civilian Production Administration will take over, and will carry forward, those remaining W.P.B. functions and controls that are required during the transition period of reconversion to accomplish the objectives laid down by the applicable federal statutes and Executive Orders of the President, including particularly the War Mobilization and Reconversion Act of 1944 and the recent executive order of the President outlining the policies to be followed in the transition from war to peace," Mr. Small said. "The functions transferred to the new office will be utilized to further a swift orderly transition from war-time production to a maximum peace-time production in industry free from war-time government controls, with due regard for the stability of prices and costs.

"It will use its authorized powers to expand the production of materials which are in short supply; limit the use of materials which are still scarce; restrict the accumulation of inventories so as to avoid speculation, hoarding, and unbalanced distribution which would curtail total production; grant priority assistance to break bottlenecks which would impede the reconversion process; facilitate the fulfillment of relief and other essential expert programs, and allocate scarce materials or facilities necessary for the production of low priced items essential to the continued success of the stabilization program."

The executive order creating the Civilian Production Administration as a separate agency carrying out the policies of the Director of War Mobilization and Reconversion, transfers to it on November 3, 1945, all the still remaining functions, powers, personnel, records, etc., of the War Production Board. Any outstanding W.P.B. regulations, directives, orders, or delegations of authority remain in full force and effect as instruments of Civilian Production Administration, until revoked or amended by that office. Mr. Small explained, however, that the individual CPA controls will be lifted as soon as each is no longer needed for orderly reconversion.

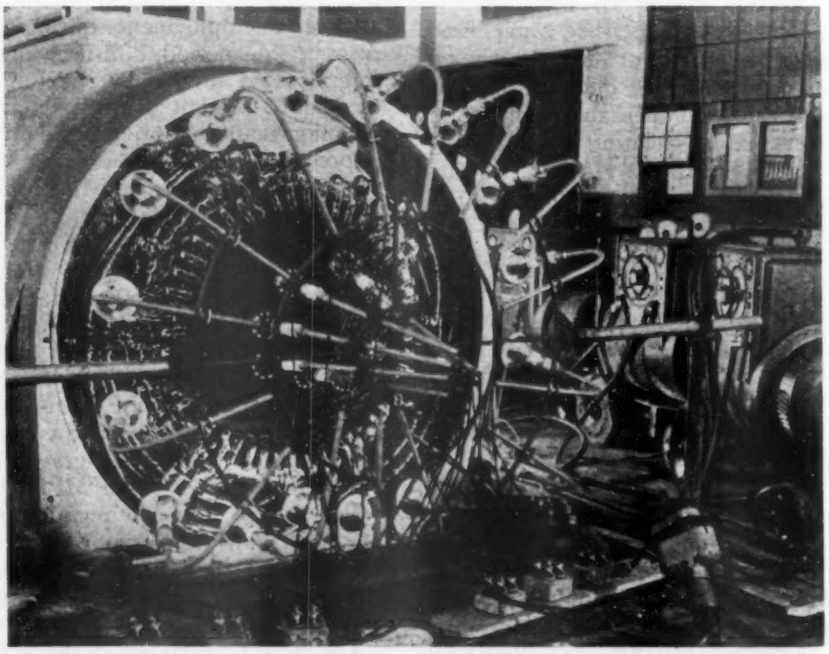
Outlining the organizational structure of the new office, Mr. Small said there will be five main bureaus handling respectively, industrial operations, priorities, field operations, international supply, and the orderly demobilization of former W.P.B. functions that will now either be closed out or in some cases, transferred to other agencies.

Unique Method Used For Baking Insulation

The baking of insulating varnishes of turbo generator stators called for some "on the spot" thinking for the electrical superintendent of the Southwestern Portland Cement Company of Osborn, Ohio. Scheduled maintenance called for the removal of the generator rotor and thorough cleaning by washing the stator winding; and after drying it was decided to apply a heavy sealing and a protective film of flexible insulating varnish.

For baking, it was decided to heat the winding internally with direct current from the three 400-ampere Hobart arc welding machines connected in parallel series and to heat externally with a framework of 24 375-watt infra-red lamps focused in each end of the windings.

The current drawn through the generator winding was finally set at 15 volts and 420 amperes; and with two banks of infra-red lamps a stable temperature of 250 degrees F. was reached and maintained. Three coatings were applied with an air syphon gun, each treatment being followed by a 12-hour bake.



Baking varnish on generator stator at the Southwestern Portland Cement Co.

THE LIME PLANT OPERATOR

BY WOLF G. BAUER

FUELS AND THEIR APPLICATION TO LIME BURNING

another P and Q exclusive

IN discussing fuels for lime burning, it is almost impossible to ignore the close relationship between kilns and fuels, and how one influences the other in cost, lime quality, efficiency, and capacity. However, since we will take up kilns and burners in a later issue, let us briefly review the most common fuels available for the burning of lime and compare their costs, properties, and relative suitabilities for kiln applications.

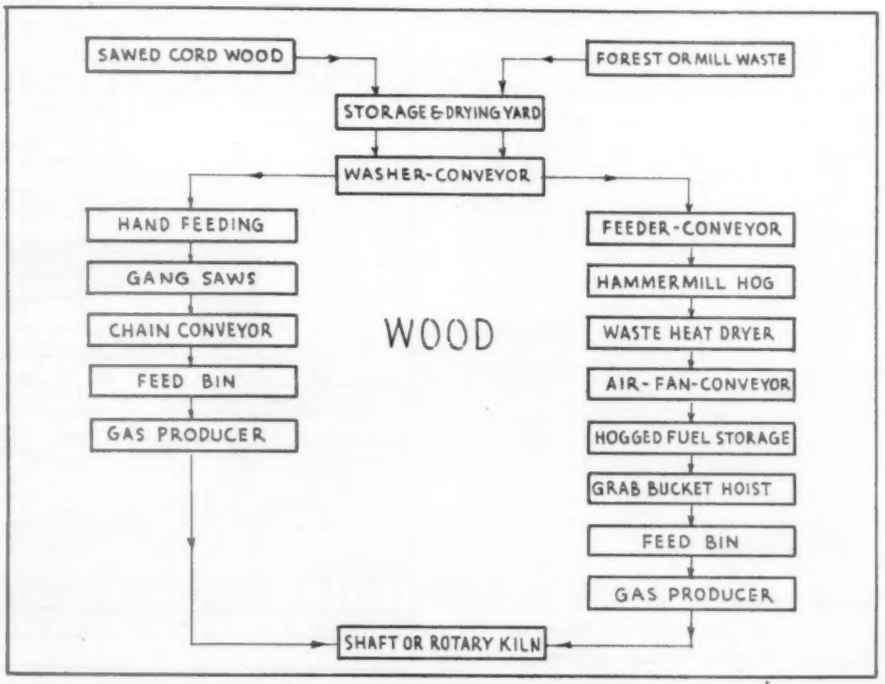
In the East and Middle West, coal is the most prevalent fuel for both rotary and shaft kilns. In the South it is generally natural gas. In the Southwest and on the Pacific Coast, oil is used predominantly, both in rotary and shaft kilns, although there are still a few wood-fired kilns in operation, along with some that use coal. Coke is used in some mixed feed kilns, chiefly in connection with sugar mills. In isolated instances we also find oil coke as well as pitch from refineries used in rotary kilns. In all areas, the cost of the fuel has usually been the determining factor in the choice of fuel, showing the importance of fuel in the economics of lime production.

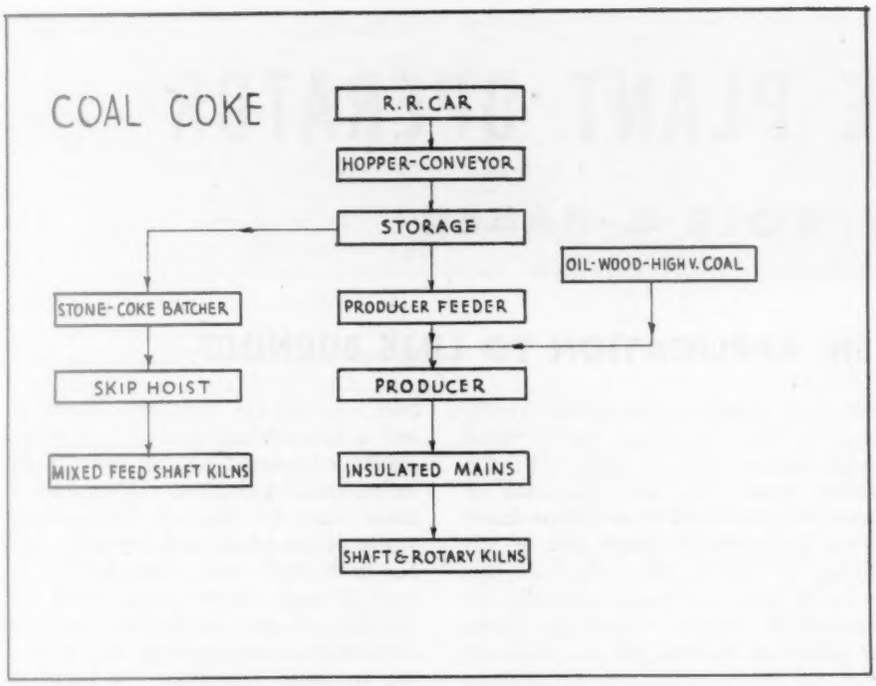
As an introductory statement, it might be mentioned that practically any fuel substance can be adapted for the purpose of generating sufficient heat to calcine limestone. However, some fuels present certain disadvantages, or require more elaborate equipment to make their heat-generation possible. Since the widest applications for lime are now in the chemical field, such impurities as volatile sulfur, phosphorus, or ash may make them unsuitable for certain lime-burning operations.

Since our modern lime industry is still using the two main-type kilns, namely, rotary and shaft, we have two pronounced trends in fuel application, each one the outcome of an effort to increase kiln capacity and lower burning costs, either directly or indirectly. Rotary lime kilns have almost entirely gone to direct firing of pulverized coal, oil coke, or pitch, except those which, due to their location, can be fired with oil or natural gas. On the other hand, the old-type coal or wood, direct-fired shaft kilns have been converted to some sort of gas firing, as that is the only way this type of kiln can be substantially increased in output. Such gas firing is either by natural gas or producer gas, the latter being generated from wood, wood waste, coke coal, oil or a combination of these.

Wood As mentioned previously, wood is still used as a fuel in some localities. This wood, being generally cord wood, has become increasingly costly, especially so because of increased wages in cutting, delivery, and firing, and the low efficiencies obtained with it in the past as a kiln fuel. This, however, need not be so, or at least some of the effects of increased labor cost and low heat efficiencies can definitely be neutralized. Cord wood is, of course, expensive, not only due to the hand labor involved, but also because it does not utilize the lowest-grade wood of the forest. However, in certain localities, there is still a tremendous quantity of wood substance wasted by saw mills, pulp mills, and logging operators, and if these can be tapped, such wood waste is an ideal and low-cost fuel for both shaft and rotary kilns. In fact, if such waste from wood industries is not available, modern methods of wood cutting and reducing to chips and shreds by hammer hogs, utilizing all parts of the live and dead trees and snags for fuel, will certainly supply low cost solid gas if timberland is near the plant. Such operation lends itself to considerable mechanization.

Wood should, of course, be seasoned before it is used in producers; however, some moisture up to 30 per cent. is not at all detrimental in actual gas producer operation. If stored too long in open piles in the form of hog fuel and sawdust, its heat value slowly decreases. Gas made from wood can easily be as high in B.t.u.'s as coal gas, and producers are clean and simple to construct and operate. If logs are dragged during logging, the bark should be washed if possible, not





only to reduce wear on hammers of mills and teeth of gang saws, if wood is charged in blocks, but also to prevent excessive fluxing and slagging of producer grates. For rotary kiln application, provision should be made to burn such wood gas with pre-heated air, and retain as much sensible heat as possible by thorough insulation.

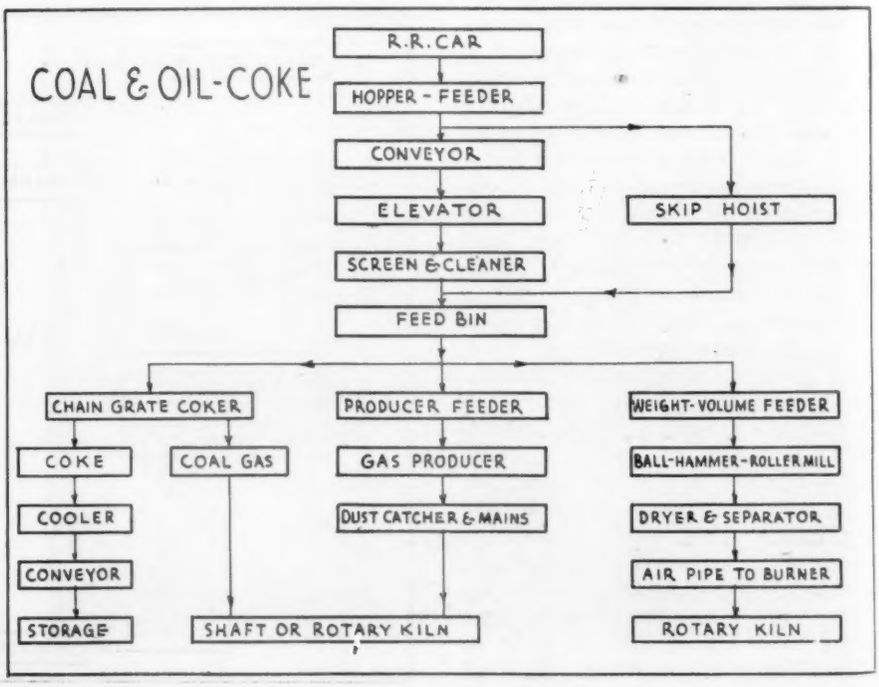
Wood is a much more variable fuel than most others, depending on the season, species, seasoning, and piling for measurement. Although it contains less than 1 per cent. ash and so entails little cost in its removal, it is quite bulky in the block, chip, or sawdust condition. It is sold by volume, and this makes the cost on a B.t.u. basis rather variable and questionable. A cord of wood is represented by a volume of 4- by 4- by 8-feet, but the amount of bark, the manner of piling, the straightness of the sticks, etc., all tend to introduce variables in weight and heat value per cord. Hogged fuel, sawdust, and shavings are sold generally by the unit of 200 cubic feet, the weight and heat value of which also are affected by moisture, packin, and ratio of constituents.

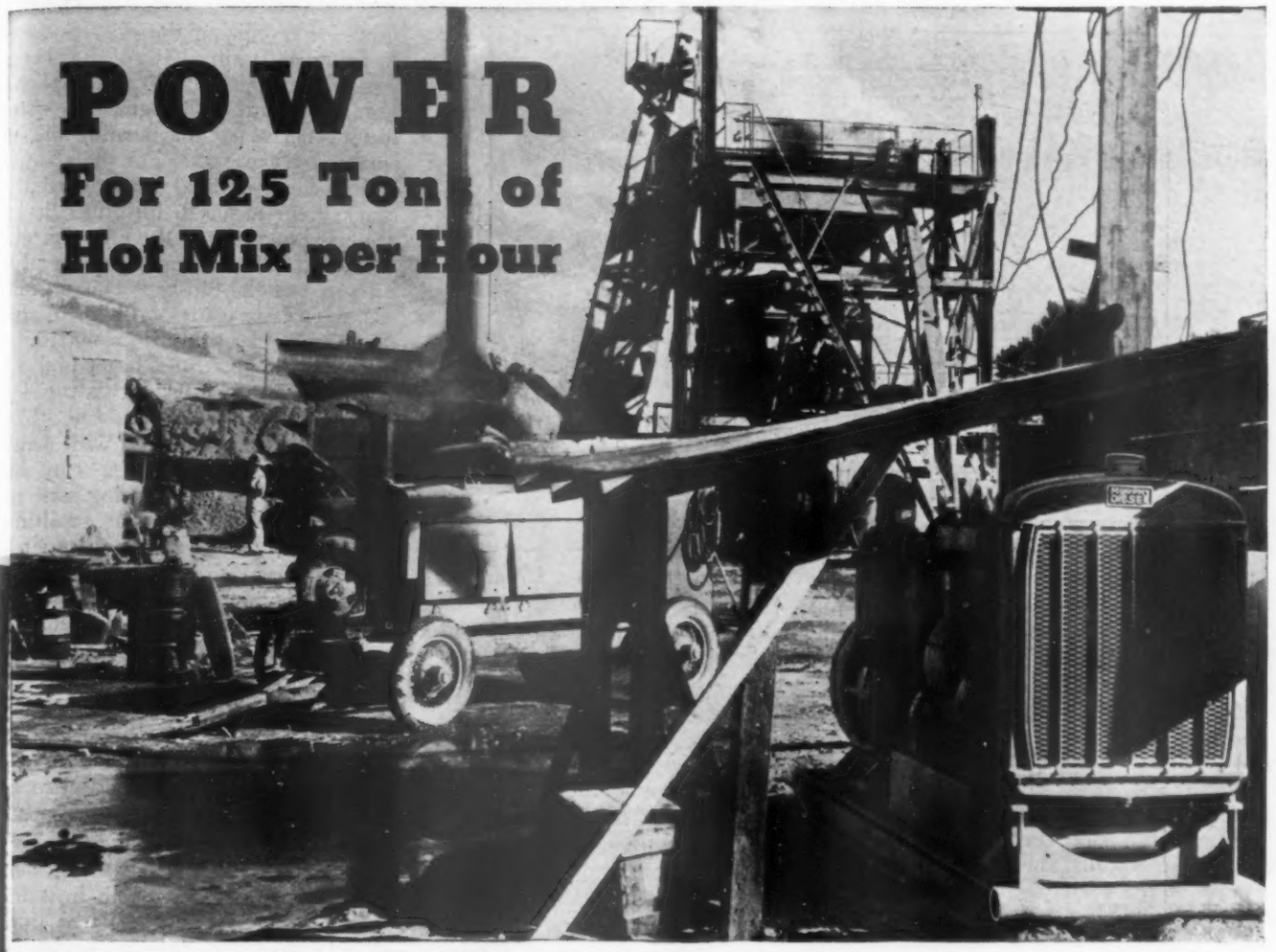
Moisture is the great diluent in wood fuel, not only because it reduces the actual weight of wood substance, but because of the heat necessary to drive off the water and then heat the steam to the process temperature. We will deal more in detail with the combustion of these fuels in a later issue.

Coal Coal calcines by far the largest tonnage of lime in the United States. It is generally the lowest priced fuel available. But the term coal covers a wide range and this fuel must be wisely chosen if it is to make suitable lime with minimum cost and trouble in its conversion to heat.

We have noted earlier that most fuels must be gasified for efficient high-capacity shaft kilns, whereas rotaries, if fired by coal, are fired directly by the powdered fuel. This automatically classifies or eliminates some of the coals for either one or the other application. In selecting coal for rotary lime kilns, we have available a wide range of coals suitable for pulverizing and direct firing, as most coals can be pulverized if sufficiently dry to begin with. However, it is quite imperative that the ash content be not too high. This is the only fuel and application where ash contamination with the lime is a problem to be considered, outside of the coke-burning mixed-feed kilns. The fusion point of the ash as well as the lime temperature are also of considerable importance, next to volatile sulfur in the coal. If the ash is mainly in the form of shale or bone, provisions for removal can be made in the grinding mill, or between storage and mill feeder. Coal of finer sizes, and hence often of lower price, can be utilized in pulverized coal firing. Such coal is either ground in roller, ball, or tube mills, and where sufficiently fine (80-95 per cent. through 200-mesh), is blown out of the mill into the burner, or is blown to a cyclone and stored in bins, later to be fed to an air-blown burner for burning in the kiln. The latter, or storage system, is generally more economical in large installations, whereas for rotary kilns, the direct-fired mill is a more flexible and lower-cost system.

Coal for modern shaft kilns must be gasified, and, therefore, its properties hinge around its suitability in gas producers. This requires a coal of certain screened size (3 to ½ inch is best), high-temperature fusing ash (over 2,500 degrees F. is best), of coking but not too strong caking properties, and generally of medium-high volatile matter content (between 30-40 per cent.). Ash quantity in itself is not detrimental except inasmuch as it increases labor charges for its removal from the producer, and in that it lowers the heat value per weight of fuel bought. A lower





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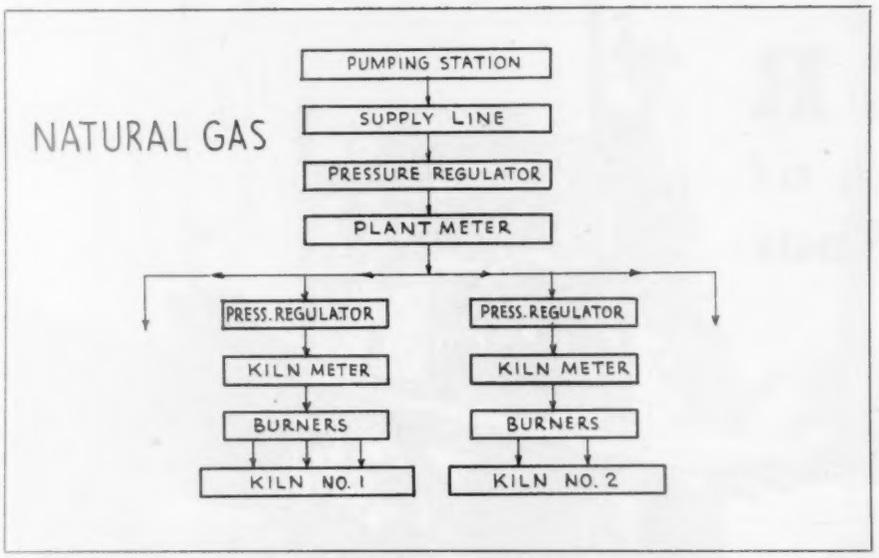


ash content is more important in high-capacity mechanical producers than in hand-fired producers of lower gasification rate. The higher volatile coals produce a more luminous and milder burning gas, although cleaning problems of burner ports and gas mains are increased.

Coking coal has also been used on traveling grates, from which the distilled volatiles were used to burn lime in rotary kilns, and the resulting coke used for carbide manufacture.

Coke Coke is not very extensively used, chiefly because it is higher in cost, less readily available, and because it does not produce a luminous flame either directly fired or gasified. In mixed-feed kilns it is used instead of coal mainly because the volatile matter of the latter would be lost in the pre-heating zone, and give trouble in the exhaust system due to excessive heat and plugging. In some cases it can be used in producers if wood, coal, or oil is added during gasification to increase the B.t.u. content and luminosity of the resulting gas. Petroleum coke, due to its high B. t. u. value and low ash content is especially adapted to rotary kilm firing in pulverized form.

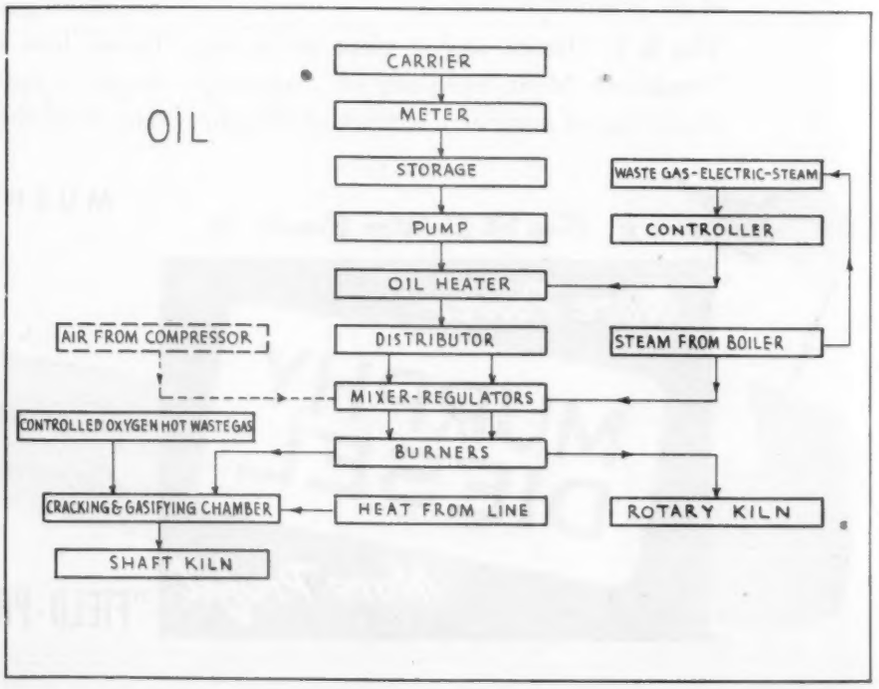
Natural Gas This is probably the most desirable fuel when available at low cost, as in most parts of the South. Due to the ease with which it can be controlled, the constancy of its heat content and the extremely low labor and investment cost connected with it, no better fuel could be desired. Possibly its only disadvantage lies in its low luminosity and the intense concentration of heat when improperly applied to lime burning. This, however, is readily overcome in modern burning technique. It is best to have each kiln burner supplied with a gas supply line separately under automatic pressure control, to compensate for fluctuations caused by other kiln demands or outside load factors. Both rotary and shaft kilns can be fired equally well with this fuel.

Fuel Oil Oil is adaptable to both rotary and shaft kiln burning, although it is more widely used for the former type installation. Next to natural gas, it is also an ideal fuel due to its constant quality, ease of control, low labor charges, and relatively low initial investment for installation of burning and supply equipment. Generally, the heavier crude oils can be used if sufficiently heated to lower the vicosity in the atomizing burner.

When applied to rotary kilns, no particular difficulties are encountered. Steam or compressed air are used for atomizing the oil. Success in firing shaft kilns with oil has been variable, due mainly to mis-application and failure to recognize the conditions necessary for burning oil in constricted passages. For shaft kilns, oil is best gasified and partially cracked, in order to introduce it in dispersed quantity to the lime charge. This can be accomplished on the principle of the old-type Dayton oil-gas generator, using the heat in the upper cooler section of the shaft kiln to gasify the oil. Such gas is high in illuminants and will contain over 300 B.t.u. per cubic foot. Oil, like natural gas must be fired with some diluting inert gas which can be tapped from the pre-heating zone of kilns in order to make the resulting flames more suitable to low-temperature burning.

Pitch in fine scale form is sometimes available near certain refining plants and makes an excellent fuel for rotary kilns, due to its high B.t.u. value and luminous flame characteristics. It can be handled and burned similar to coal in direct-firing grinding mills with some slight adjustment in mill-setting and blast air temperatures, these having to be considerably lower due to the low softening point of this fuel. Its available heat for calcination is somewhat lower than oil coke due to the greater hydrogen content.

The flow diagrams given show the major steps and equipment involved in making the various fuels available to the lime-burning kilns. In the December issue we will go into some detail on the comparison of fuels on their available heat basis.



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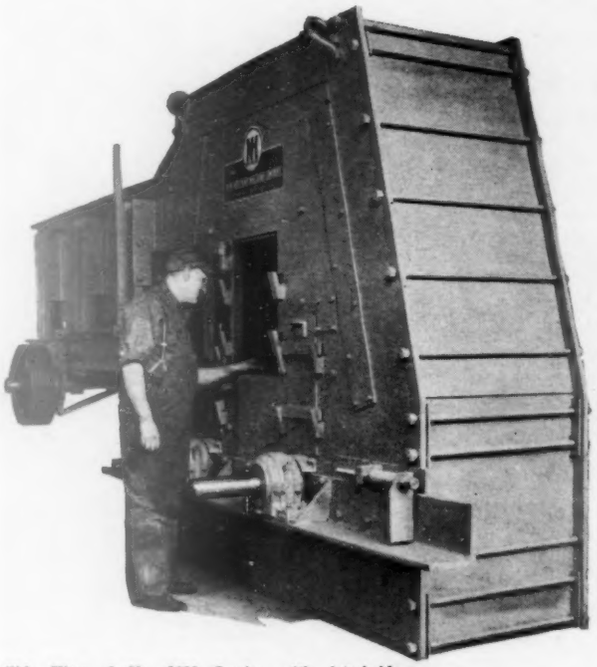
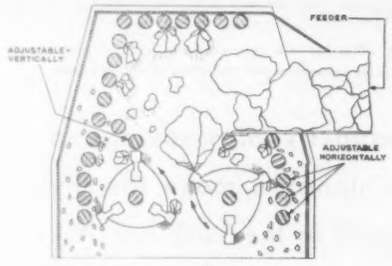


Side View of No. 3030 Crusher with detachable Reciprocating Feeder operating in Landis Stone Meal Company Plant, Reams, Pa.



HOW IT WORKS — Impacting action of the two gigantic impellers, operating clockwise and counter-clockwise, strikes the stone in mid-air as it enters the crusher. Material is thrown upward against the grate bars and rebounds to the impellers. This process continues until the stone is reduced to the required size when it passes around the impellers and out through the discharge openings. Impellers travel at adjustable speeds of 300 to 900 rpm. Size of finished product is easily and quickly controlled. Manganese steel impeller bars have four striking faces and are made to be reversed when worn.

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THE NEW HOLLAND Model 3030 Double Impeller Crusher takes the largest pieces of shovel-feed stone and reduces them to sizes desired for processing after crushing. It acts on the impacting principle, taking the stone as it comes and reducing it to small particle sizes. Action of the impellers eliminates clogging. Extreme simplicity and ruggedness keeps maintenance and operating costs at an astonishing low level. All wearing parts are designed for quick, inexpensive replacement.

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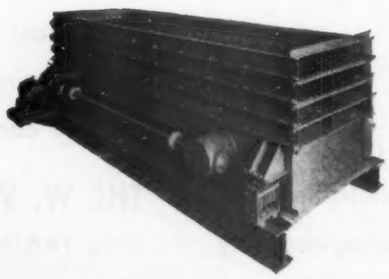

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PERSONAL MENTION

CHARLES T. LIMERICK, for the past eight years general superintendent of Vermont Asbestos Mines, has been appointed chief engineer of the Ruberoid Company, with headquarters at the Ruberoid plant at Bound Brook, New Jersey. I. MORGAN POTTER, formerly chief

C. T. Limerick

I. M. Potter

assistant to Mr. Limerick, has been named to succeed him as general superintendent of all the company's Vermont operations.

A. K. FROLICH, A. LUNDTEIGEN, JR., and P. L. WRIGHT were recently honored by promotions in the Ash Grove Lime & Portland Cement Company organization. Mr. Frolich was made chief engineer of all plants; Mr. Lundteigen became chemical engineer of all plants and superintendent of the Louisville, Nebraska plant; and Mr. Wright was appointed assistant superintendent of the Louisville plant.

SAMUEL H. DOLBEAR and CHARLES H. BEHRE, JR., have organized a new firm, Behre, Dolbear & Company, consultants in mining, metallurgy, geology and the mineral industries. Their associates are H. F. Bain, W. F. Boericke, J. F. Geary, G. A. Joslin, C. C. Morfit, W. A. Rukeyser and Herbert Waterman. The firm will maintain offices in New York and Los Angeles.

FRED C. ROCKWELL has been appointed director of the Miscellaneous Minerals Division of the War Production Board.

FRANCIS C. LINCOLN has been transferred by the Bureau of Mines from Platteville, Wisconsin, to Rapid City, South Dakota, as examining engineer for the Black Hills area.

BLANDFORD C. BURGESS, who recently became chairman of the Industrial Minerals Division of the A.I.M.E., was formerly vice-president and director of the United Feldspar & Minerals Corporation of New York. He is at present engaged in mining consulting and the management of his own mining properties. His headquarters are at Spruce Pine, North Carolina.

BURT M. KEENE, who was formerly acting assistant plant manager of the Glens Falls Portland Cement Company of Glens Falls, New York, was recently made assistant plant manager.

E. A. DUFFORD, Idaho Portland Cement Company's sales manager at Inkom, Idaho, recently was named a member of the Idaho state planning board.

E. B. Hollingworth

E. BRADFORD HOLLINGWORTH, until recently production engineer for all National Gypsum Company plants, has been appointed plant manager of the firm's York, Pennsylvania, lime plant, replacing G. R. Lacy, who has resigned.

Mr. Hollingworth is a graduate of the Carnegie Institute of Technology. He became associated with National Gypsum immediately after completing his course in 1935.

MARION O. KIRP, G. R. DUMOND and LOUIS CREVELING recently have been given promotions on the staff of Standard Portland Cement Company of Cleveland, Ohio. Mr. Kirp, superintendent of the cement division, became operating assistant of the alkali division under W. G. Schmucker. Mr. Dumond was named manager of the cement division; and Mr. Creveling is now assistant division manager.

W. J. McCoy

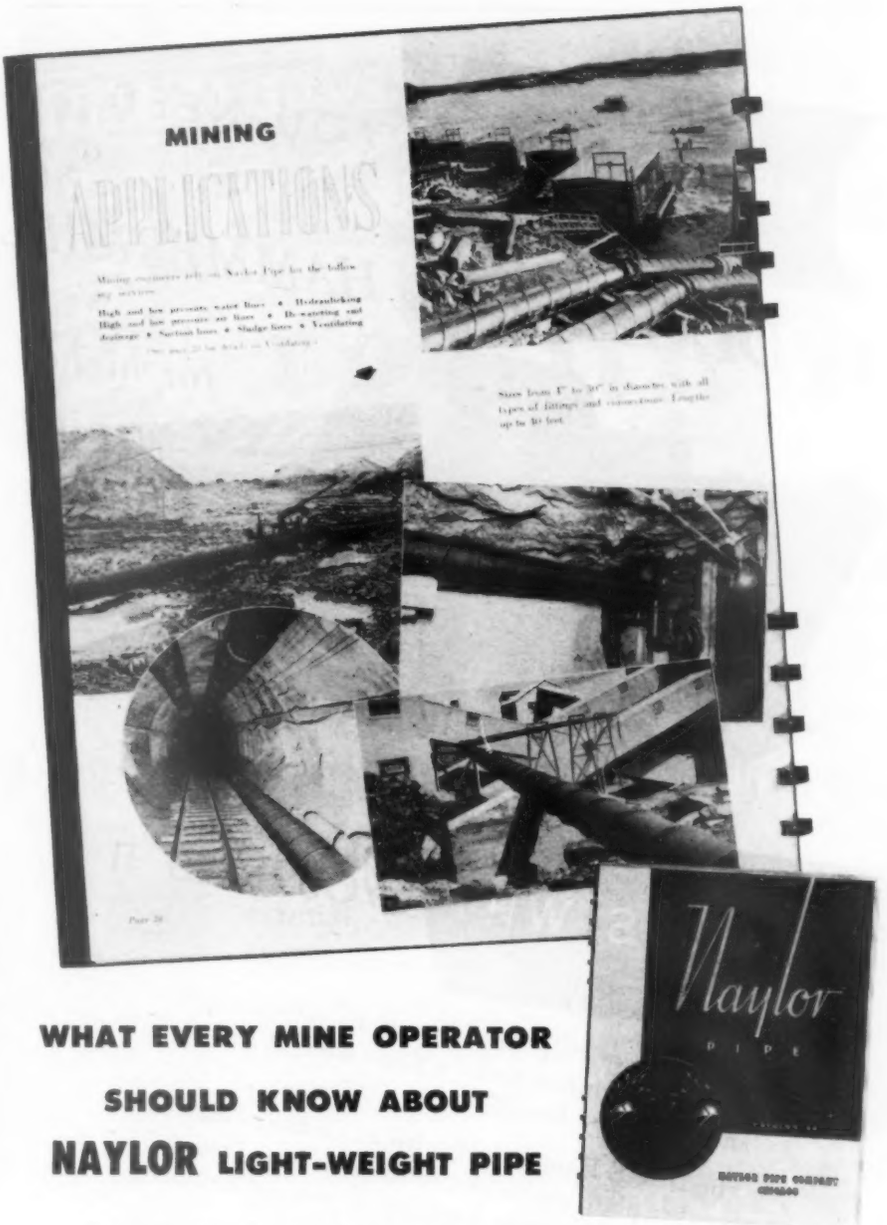
WALTER J. McCOY has been appointed manager of research laboratory of Lehigh Portland Cement Company, effective September 1, 1945. Mr. McCoy has been affiliated with Lehigh Portland Cement Company since 1938, as research chemist since 1940. During the war period he taught evening extension classes for Pennsylvania State College in engineering, chemistry and instrumentation.

FRANK G. CORREGAN, formerly superintendent of Pittsburgh Limestone Corporation's Moler dolomite quarry at Millville, West Virginia, was recently appointed purchasing agent of the company. He has been with the firm for 24 years, the last 18 as Millville superintendent.

J. J. BASSETT, former superintendent of the Lehigh Portland Cement Company plant at Oglesby, Illinois, resigned from his position on October 1. Mr. Bassett became associated with the company in 1918 and was made superintendent in 1937.

P. A. GROLL, until now assistant superintendent and supervising chemist at Oglesby, succeeds Mr. Bassett. Mr. Groll joined the Lehigh staff in 1925.

M. J. CAVANAUGH has been appointed assistant sales director of the Consolidated Cement Corporation of Chicago for Michigan, Indiana and Ohio.



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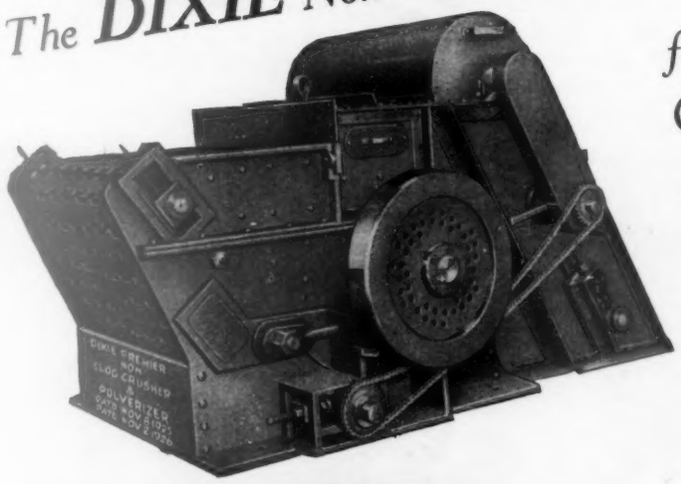

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The DIXIE Hammermill with its *exclusive* moving breaker plate guarantees continuous high feed and record production on any kind of material handled.

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MANOEL VIVACQUA VIEIRA and L. A. RANGEL of Rio de Janeiro, Brazil, were recent visitors in our offices. Mr. Vieira is a contractor and also operates two crushed-stone plants, one near Rio and the other near Sao Paolo. He is here to buy new construction and production machinery. Mr. Rangel is an equipment distributor and manufacturers' representative.

OSCAR GARCIA LOZANO of Monterrey, Mexico, was a recent visitor in our offices. He is shopping for a new gravel crushing and screening plant.

HENRY CROWN recently was elected chairman of the board of directors of Material Service Corporation upon his retirement from active service as a colonel with the United States Army Corps of Engineers. Associated with the firm since its establishment in 1919, Mr. Crown resigned as chairman of the board upon entering the service in 1942.

Lt. Col. Colnon

Colonel Crown

STUART COLNON, former lieutenant-colonel in the United States Army Engineers, has been elected Material Service vice-president. Mr. Colnon, who was commissioned as a captain in 1942, served in the South Pacific theater for the last two years.

L. J. N. KELIHER, former president of the Big Rock Stone & Material Company, Little Rock, Arkansas, has sold his interest in the firm to R. S. Wilson, vice-president, and the latter's son, Lt. Col. R. S. Wilson, Jr. Mr. Keliher will go into business in Dallas, Texas.

JACK K. WHITE, recently discharged veteran of 32 months of infantry combat service in the Mediterranean theater, has been named director of public relations by the Marquette Cement Manufacturing Company of Chicago.

Captain White

Before serving in the Army as captain with the 34th Infantry Division, Mr. White had filled editorial posts with *The New York Times, The New Yorker* and *Esquire* publications.

ERLING A. MICHAELSON, former personnel director for Bendix Aviation Corporation, Illinois Division, has been appointed assistant industrial relations manager for the Marquette Cement Manufacturing Company.

PHAON H. BATES, chief of the Division of Clay and Silicate Products, National Bureau of Standards, and a member of the Bureau's staff since 1910, retired from his office on September 15. Mr. Bates has been actively interested in the American Society of Testing Materials, the American Concrete Institute, and the American Ceramic Society, having served as president of the first two.

DOUGLAS E. PARSONS, a member of the National Bureau of Standards for more than 20 years, will succeed Mr. Bates. Mr. Parsons has been associated with the Bureau's section on masonry construction.

OBITUARY

CHARLES A. PORTER, 76, former vice-president and superintendent of the Lawrence Portland Cement Company of Boston, Massachusetts, and founder of the Alliance Cement Block Company of Northampton, Pennsylvania, died on October 13. He was the organizer of the sand pits at Palmerton, Pennsylvania, and also directed the construction of a plant at Thomaston, Maine, for the Lawrence Portland Cement Company. Mr. Porter had been retired from active business for the last 15 years.

ARTHUR E. STANGER, vice-president of the Whitehall Cement Manufacturing Company of Philadelphia, died in that city on September 22 at the age of 69.

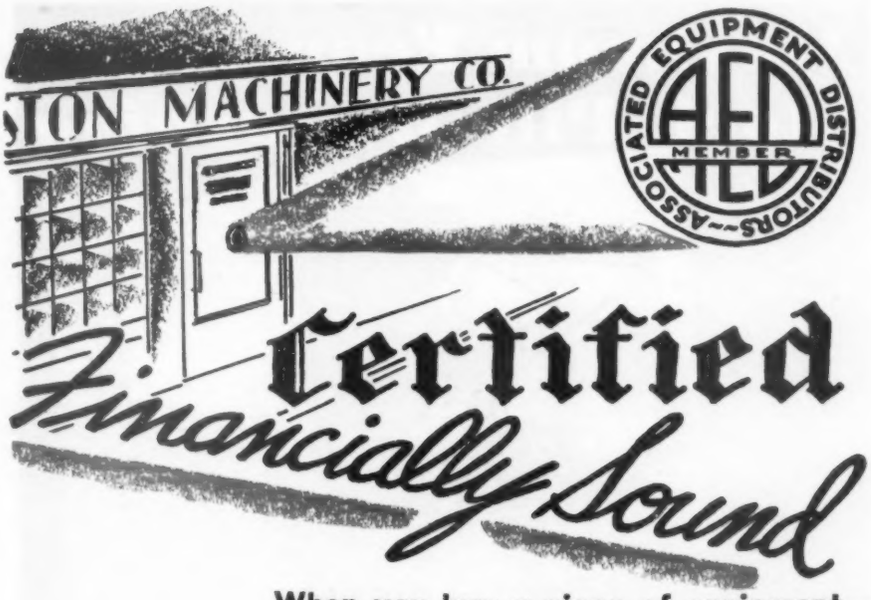
JOHN D. CRONENWETH, 64, chairman of the Great Lakes Foundry Sand Company, died October 14, in the Henry Ford Hospital at Detroit, Michigan.

J. D. Cronenweth

Mr. Cronenweth was associated with the National Association of Manufacturers, the National Industrial Sand Association, the American Foundrymen's Association, and the Detroit Board of Commerce.

EUGENE ENLOE, 86, prominent business man and banker of Spokane, Washington, died in that city on September 2. Mr. Enloe was a settler in Spokane during the boom days of the '90s. He was president of the Idaho Portland Cement Company of Inkom, Idaho, and was actively interested in several other enterprises at the time of his death.

EBEN J. MOORE, J.P., former Scots limestone quarry owner and writer, died in England at the age of 65. He contributed to such English publications as *The Stone Trades Journal, Master Builder, Cement, Lime and Gravel,* and *The Quarry Manager's Journal.* He was the first chairman of the South of Scotland branch of the Institute of Quarrying.



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This Eagle Stock Pile Rewasher equipped with Shale Remover, produces washed materials to most exacting specifications.

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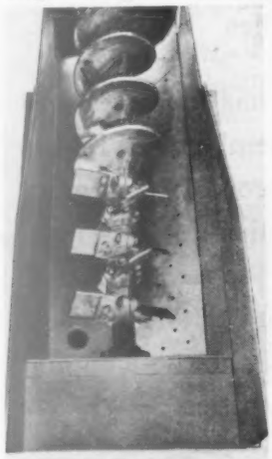
Most state highway specifications demand that gravel and crushed stone from stock piles be washed before being delivered to the concrete mixers. This is due to the fact that in stock piles stones spall and dust and dirt accumulate. When unwashed materials are used, the quality of the concrete suffers. To meet these requirements, even if the material has been washed before being piled, rewashing is frequently necessary.

Eagle Single and Double Screw Washers perform this task thoroughly, speedily and most economically. Too, they insure the production of premium washed materials to conform with the most rigid specifications of today and the possibly still higher requirements of tomorrow. Their characteristics include: high continuous capacity; controlled, concentrated water volume; more thorough scrubbing; and minimized operating and maintenance costs.



Eagle Shale Removers are frequently a profitable auxiliary, as in the installation pictured above. Fitted to the water discharge end of the tub, the Shale Remover takes off shale, and is adjustable to any differential in specific gravity. Where the crushed stone or gravel has a high percentage of "conglomerate" adhering to it, the sectional screw flights can be replaced with paddle type flights. Special trash-removing water discharge tub end is available to remove excessive sticks, wood chips or vegetation.

For full information on Eagle Screw Washers and Shale Removers, send for Bulletin 44.

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EAGLE *Specialized Sand and Gravel Equipment*
"SWINTEK" DREDGE LADDERS — SCREW WASHERS
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"SERVING INDUSTRY FOR OVER SEVENTY YEARS"

Legal Decisions

By LEO T. PARKER

Seldom do the higher courts render so many interesting and informative decisions involving production and sale of non-metallic products, as have been rendered during the past few weeks. Obviously, it is important that our readers know the cause and outcome of these modern and new law suits. This legal information will assist readers to avoid similar legal controversies, and also, these new citations are valuable when defending unavoidable suits. Readers who desire all details of any of these new decisions may, by referring to a specific citation, obtain and read the complete case in any good library. File these cases for future reference.

Blasting Liability

Modern higher courts consistently hold that it is the legal duty of employees who perform blasting operations to warn all sightseers, and other persons, who might *reasonably* be expected to be *within* its range. Failure to do so may result in extraordinarily heavy damage liability.

For illustration, in *Cleveland-Cliffs Company v. Metzner,* 150 Fed. (2d) 206, reported September, 1945, it was shown that a person named Metzner went to the scene of a blasting explosion for the sole purpose of sightseeing. At the time of the explosion, Metzner was standing upon a public road about 475 feet from the location of the dynamite charges. He was struck by fragments of steel set in motion by the explosion which injured him to the extent of destroying all the fingers of his right hand except his thumb and he also was slightly injured in his right hip. There were several sightseers, but none except Metzner was injured.

According to the evidence, no instruction was given to any person as to where he should stand during the explosion, and *no warning* was given that any of them was in a place of danger. Metzner sued the corporation which did the blasting.

Metzner was 56 years of age at the time of the accident, and is a dentist. After his injuries he was unable to resume the practice of his profession.

It is interesting to observe that the higher court held the corporation liable to Metzner for $27,794 damages. This court said:

"Appellant's employees in charge of the use of the explosive knew that curiosity seekers and onlookers were at the scene of the explosion. It would be a cruel and inhumane doctrine to announce that a person using a dangerous instrumentality like dynamite might have actual knowledge of the fact that some person was in an unsafe place where he was likely to be injured at the time of an explosion and yet not be responsible for his injuries, on the theory that at the very moment of the accident he did not actually know the person was in a perilous position although he could have known it by looking in the direction of the person injured."

Insurance Policy Void

Generally speaking, the higher courts hold that diseases contracted by employees are not covered by insurance policies issued for accidents. Moreover, few employers realize that for adequate protection all insurance policies should *specifically* protect against both accidental injuries and occupational diseases.

For example, in *Concrete Materials Company v. Employers Mut. Liability*, 19 N. W. (2d) 523, reported August, 1945, it was shown that an employee sued the Concrete Materials Company to recover damages for injuries which he alleges were sustained by reason of the negligence of the employer in failing to provide a safe place in which to work. The employee alleged that as a result of such negligence he contracted the disease known as pneumoconiosis or silicosis.

The Concrete Materials Company carried insurance to protect him against such suits but the insurance company denied that the damages claimed in the suit instituted by the employee were covered by its policies of insurance.

The insurance company defended the suit on the grounds that its policy clearly specified that no insurance was provided with respect to occupational diseases.

In holding the Concrete Materials Company *not* protected by the policy, the higher court said such restrictions in a policy is valid, if no state law specifically requires insurance companies to provide insurance against occupational diseases. And further that the disease silicosis is not covered by an "accidental" insurance policy.

Award Disallowed

Modern higher courts consistently hold that a person who sues for compensation under the State Workmen's Compensation Act must prove that injury or death actually arose from the employment. Failure to prove these facts will result in a favorable verdict for the employer.

For illustration, in *Jaloneck v. Jarecki*, 43 Atl. (2d) 431, reported September, 1945, it was shown that dependents of an employee, who contracted and died of the disease silicosis, sued to recover compensation under the State Workmen's Compensation Act. The employer denied that deceased's death was the primary result of silicosis.

Since the dependents failed to prove that the death of the employee was caused by silicosis, the higher court refused to allow or award compensation. This court said:

"The board's appraisal of the testimony obviated a finding that the death of deceased was caused solely by silicosis, either alone or accompanied by active pulmonary tuberculosis. It was necessary that claimant establish to the satisfaction of the board not only this fact but the other facts enumerated in the act—essential elements of her case."

Compensation Refused

An injured employee is not entitled to recover compensation under the State Workmen's Compensation Act, if he fails to prove that the injury was sustained "within the scope of the employment."

For illustration, in Spitz v. National Company, 39 Atl. (2d) 170, reported January, 1945, an employe sued to recover compensation for an injury he "alleged" he sustained when he and another employee were engaged in their regular work.

The testimony did not convince the court that the employee had sustained the injury in this manner. Therefore, it refused to allow compensation to the employee.

Backs on Child

Although a driver parks on the left side of a street and injures a person, when he backs his truck, his employer is not *always* liable in damages. This is so because no person or corporation is liable on a suit filed by an injured person unless the testimony proves that the accident resulted from the driver's negligence.

For instance, in *Dallas v. Diegal*, 41 Atl. (2d) 161, reported March, 1945, it was shown that a child two years old was run over and injured by a motor truck as it was being backed away from its parked position on the wrong side of a street. The father of the child sued the company for damages.

During the trial both the mother and the driver testified that they did not see the child at any time. In view of this testimony the higher court refused to hold the company liable in damages for the death of the child.

Demurrage Charges

Demurrage charges must be collected by common carriers in strict accordance with the schedule provisions.

For illustration, in *Chesapeake & O. Ry. Company v. Gorman*, 188 S. W (2d) 316, reported August, 1945, it was shown that a railway company sidetracked several cars of crushed rock consigned to a contractor engaged in constructing a nearby highway.

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- Conical heads eliminate the sliding contact which produces excessive wear.
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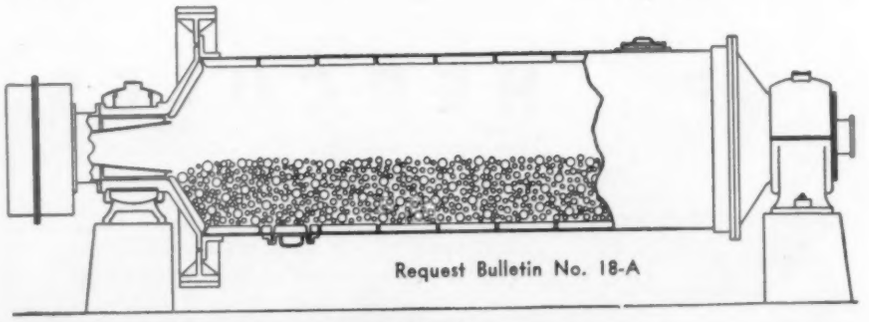


Request Bulletin No. 18-A

HARDINGE TUBE MILLS

On account of a sudden flood the contractor was unable to unload the rock, and incurred liability under the tariff schedule for demurrage to the amount of $367.40 in the month of June and the amount of $1,895.30 during the month of July.

The carrier sued the contractor to recover the alleged demurrage due. Although the lower court held the contractor not liable the higher court reversed the verdict, and said:

"Tariff schedules and demurrage charges required to be filed by carriers with State and Federal agencies are founded in public policy and to be enforced in strict accordance with the schedule provisions. Hence no deviation therefrom by contract, estoppel or otherwise will be allowed or enforced."

Thus, no contract is valid by the terms of which a common carrier agrees to reduce or cancel demurrage charges.

Less Than O.P.A. Price

According to a late higher court decision the owner of equipment may lease it at any rental less than rentals specified by O.P.A. without liability or chance of losses resulting from an illegal contract.

For example, in *Palfreyman v. Bates & Rogers Const. Company,* 158 Pac. (2d) 132, reported June, 1945, the litigation involved leasing of a certain power shovel and dragline.

The question presented the court was: Do parties who contract for leasing of heavy construction equipment have the right to contract for less than O.P.A. ceiling prices?

In holding in the affirmative the higher court said:

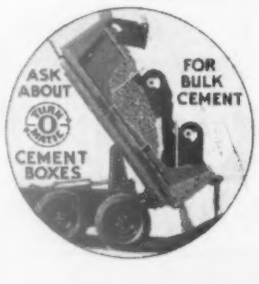
"The parties certainly had the right to contract for less than O.P.A. ceiling prices. These regulations do not set prices; they establish maximum prices."

RAILROAD WITHOUT RAILS!

Just two trips with one of these 22-ton Hercules trailer dump bodies and you've moved a full railroad carload of limestone, gravel, coal, crushed stone or any other bulk material. These designed-for-duty, built-for-business dump bodies carry 17 yards in every load—that's moving material the BIG way!

And it's the economical way, too, for one 22-ton load, moved quickly and easily in a Hercules trailer unit, eliminates numerous trips with dump trucks of lesser capacity, cuts time, labor and operating costs to the minimum. This extra capacity also makes it practical to move materials longer distances by truck, avoiding additional handlings required with combined truck-rail hauling.

If you're moving bulk materials in quantity, Bulletin 48, containing the complete story of Hercules heavy-duty hoists and dump bodies, will interest you. Write Hercules Steel Products, Galion, Ohio, Attention Dept. N.



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Questions and Answers

[Mr. Parker will be glad to answer questions regarding legal problems of PIT AND QUARRY readers. Questions should be addressed to Leo T. Parker, Legal Editor, PIT AND QUARRY.—Ed.]

Legal Editor: We carry insurance under the State Workmen's Compensation Act to protect us against damage suits to injured employees. Can the state avoid payment of compensation if we hire minors?—S. A. C.

Answer: Generally speaking, employers who willfully violate a state law prohibiting the employment of minor children is not protected by the State Workmen's Compensation Act. In other words, employers who willfully violate this law automatically forfeit their legal rights. See Peoples, 29 Atl. (2d) 418, where a boy 15 years old was injured and the employer carried insurance. Since the employer had failed to comply with a state law forbidding the employment of minors, the higher court held the insurance policy void.

On the other hand, a late higher court held that if a minor signs a paper stating that he is an adult, the employer still is protected by the State Workmen's Compensation Act.

Legal Editor: About two years ago we bought some rock-crushing equipment but it did not work well. The salesman told us he would guarantee it. Recently, we complained but the seller will do nothing. What do you advise us to do?—P. C. C.

Answer: Modern higher courts consistently hold that a verbal promise made by a salesman *never* obligates the seller unless (1) the salesman was authorized to make valid contracts; or (2) the salesman's statement had aspects of fraud; or (3) the purchaser promptly complained to the seller. For illustration, in *Bridges v. Harold L. Schaefer,* Inc., 179 S. W. (2d) 176, it was shown that a buyer and seller entered into a *written* conditional contract of sale for certain machinery and equipment. The contract provided that the equipment was sold without service wiring or plumbing, and that the contract expressed the only agreement of the parties.

In a subsequent suit the purchaser testified that the seller's salesman *verbally* agreed to deliver a single-phase electric motor, but shipped instead a 3-phase motor, which could not be used in connection with the type of electric current available in the locality. In view of the fact that the purchaser did not complain promptly to the seller, the higher court refused to listen to the purchaser's testimony regarding the salesman's verbal promise. This court said:

"The contract does not say what phase the motor shall be; but, he (plaintiff) says that the agent of the company, the salesman, told him that it would be a one-phase motor—a single-phase motor. . . He retained the motor that was sent him, and did not complain to the seller about it. It is the duty of one who makes the purchase of equipment to do one of two things; either rescind the contract, if it is not lived up to, or retain the property and sue for his damage."

It is my opinion that you are without any legal rights in this matter primarily because you have delayed too long in complaining to the seller.

TRAFFIC News Digest

CENTRAL FREIGHT ASSOCIATION DOCKET

Sup. 1 to WDA 78469 — Crushed stone, in open-top cars, carload minimum weight 90 per cent. of marked capacity of car, actual weight will apply, WDA 78469, DB 3292, dated August 10, 1945, covering proposal to establish on, from Thrifton, O., to Wilmington, O., rate of 44 cents per net ton is hereby withdrawn from the docket, upon request of proponent carrier.

Docket 78588 (2)—Limestone, agricultural (not ground or pulverized), in open-top cars, in bulk, carload minimum weight 90 per cent. of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply. Establish on, rates as shown in Exhibit A, from Carey, O., to Indiana destinations shown in Exhibit A, from Carey, O., to Indiana destinations shown in Exhibit A.

Exhibit A

Proposed rates in cents per ton of 2,000 pounds, from Carey, O., to Indiana points (N.Y.C. (W) R.R. stations): Butler 121, Waterloo 121, Corunna 127, Kendallville 127, Wawaka 127, Ligonier 138, Millersburg 138, Goshen 138, South Bend 149; (Wabash R.R. stations): Wolcottville 138, Eddy 138, Topeka 138, Millersburg 138, Benton 138, New Paris 138, Foraker 138, Wakarus 149.

Docket 78672 (1)—Limestone, agricultural, unburned in bulk in open-top cars, carload minimum 90 per cent. of marked capacity of car, except that when loaded to full cubical or visible capacity, actual weight will apply. Establish on, from Speed, Ind., to Davy, and Nisbet, Ind., 132 cents; Cynthiana, Antioch and Johnson, Ind., 138 cents per net ton.

Docket 78677 (2) — Sand (except sand, moulding, bonded — naturally or otherwise—and except ground or pulverized sand), in closed equipment, carload minimum weight 90 per cent. of the marked capacity of the car, except that when car is loaded to full visible or cubical capacity, actual weight will apply, but orders will not be accepted for cars of less marked capacity than 60,000 pounds (see Note 1).* Establish on from Grand Haven, Mich., Muskegon, Mich., and Muskegon Heights, Mich., to Milwaukee, Wis., 110 cents net ton. For application during the coming winter to become effective November 1, 1945, and expire March 31, 1946. Any provisions of the above mentioned minimum weight which conflict with I.C.C. Service Order No. 68 are suspended during the period such service order is in effect.

ILLINOIS FREIGHT ASSOCIATION DOCKET

Docket IRC 511-319 — Stone, viz.: Stone, ground or pulverized, crushed, or rough quarried; also strippings of stone quarries in straight or mixed, carload minimum weight 90 per cent. of marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply, but not less than 40,000 pounds from Prairie du Rocher, Ill., to various stations on N.Y.C. Railroad.

To (representative)	*Present*	*Proposed*
Mitchel, Nameoki	91	88
Butler	113	94
Livingston	109	94
Hillsboro	124	108
Irving	129	114
Pana	139	114

Docket IRC 511-322 — Agricultural limestone, in open-top cars, minimum weight 90 per cent. of marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply, from Rivermines, Mo., to stations on N.Y.C. (C) in Illinois. Present—As published in Mo. Ill. Tariff 22-I, I.C.C. F 219 or combination rate. Proposed — To (representative) Livingston, Ill., $1.11 net ton; Hillsboro, Ill., $1.20 net ton; Pana, Ill., $1.30 net ton; Mattoon, Ill., $1.35 net ton; Paris, Ill., $1.50 net ton; Carmi, Ill., $1.45 net ton.

Docket IRC 511-324 — Sand, except blast, engine, foundry, glass, moulding or silica. Stone, crushed, screenings, etc. described in Item 20 of IC Tariff 13321-I, I.C.C. A-11296, Ill. C.C.A.-1572, minimum weight 90 per cent. of marked capacity of car, except that when car is loaded to full visible capacity, actual weight applies to Springfield, Ill.

From	*Present*	*Proposed*
Hillside (crushed stone)	169	125 net ton
South Chicago (sand)	169	125 net ton

*Note 1—When a shipper orders a car of above mentioned marked capacity or greater and the carriers are unable to furnish car ordered and furnish a car of greater capacity than that ordered, the minimum weight for the car furnished will be that which would have obtained had the car ordered been furnished and used.

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Docket IRC 511-325 — Agricultural limestone, carload, in open-top cars, from Rivermines, Mo., to stations on B.&O. Railroad in Illinois.

To (representative)	*Present*	*Proposed*
Caseyville, Ill.	149	86
O'Fallon, Ill.	149	97
Aviston, Ill.	139	102
Beckemeyer, Ill.	139	108
Odin, Ill.	132	110
Greendale, Ill.	139	119
Olney, Ill.	139	130
Lawrenceville, Ill.	154	141
Enfield, Ill.	153	130
Shawneetown, Ill.	165	130
Louis, Ill.	149	129

Docket ORMV 511-33 — Limestone, agricultural, in open-top cars, minimum weight as per Item 300-D of SFTB Tariff 388-F, I.C.C. 840, carload from Rivermines, Mo., to Reed, Ky. Present—$3.20 net ton. Proposed—$1.50 net ton subject to X-148.

Docket IRC 511-327 — Agricultural limestone, carload, from Rivermines, Mo.:

To (representative)	*Present*	*Proposed*
Hookdale, Ill.	$1.32	$1.23
Boulder, Ill.	1.32	1.17
Cravat, Ill.	1.39	1.17
Waltonville, Ill.	1.39	1.23
Christopher, Ill.	1.39	1.30
Cambon, Ill.	1.39	1.35
Freeman, Ill.	1.49	1.35
Neilson, Ill.	1.53	1.39
Metropolis, Ill.	1.67	1.50

PRIOR SOUTHERN FREIGHT ASSOCIATION SUBMITTALS

Docket 33817—Carriers propose to establish rates on clay, crude, carload, as described in Item 550 of SFTB Clay Tariff 10-U, ICC 809, Stevens Pottery, Ga. to Birmingham, Ala., 167 cents and to Bessemer, Ensley and Fairfield, Ala., 175 cents per ton of 2,000 pounds. (Shipper, suggested by carrier.)

SOUTHWESTERN FREIGHT BUREAU DOCKET

Docket 37453 (1)—Silica sand, Festus, Crystal City and Sand Pit, Mo., to Waco, Tex. To establish rates on silica sand, carloads, from Festus, Crystal City and Sand Pit, Mo., to Waco, Tex., of $3.32 in box cars or in covered hopper cars and $3.03 in open cars.

Docket 37466 (2) — Lime, interstate points to Oklahoma. To publish the Bethany, Okla., rates at Springhill, Loneview and Putnam City, Gabe, Sheppard and Belle Isle, Okla., on lime as described in and from origins shown in S.W.L. Tariff 227-D.

Docket 37474 (1)—Silica sand, Festus, Crystal City and Sand Pit, Mo., to Fort Smith, Ark. To establish a rate of $2.77 per ton on silica sand, carloads, from Festus, Crystal City and Sand Pit, Mo., to Fort Smith, Ark.

TRUNK LINE ASSOCIATION DOCKET

Docket M-4844 (shipper)—Dolomite, crude or crushed, in carloads, from Union Stone Co. Pa., to Billmeyer, Pa., $20.00 per car. Reason: comparable with charges applying on similar services.

Docket 43092 (shippers) — Limestone, broken, crushed, ground or pulverized, carloads, minimum weight 60,000 pounds from Watertown, N. Y., to B. & H. Railroad stations: Bath, Rheims and Hammondsport, N. Y., $2.15 per net ton, in lieu of current sixth class rate of 23 cents per 100 pounds. Reason: comparable with rates applying to other points.

Docket 43093 (shippers)—Limestone, broken, crushed, ground or pulverized, carloads, minimum weight 60,000 pounds from Watertown, N. Y., to M. & U. Railroad stations: Pounds Station, Slate Hill, Johnson and West Town, N. Y., $2.37 and to Unionville and M.&U. Junction, N. Y., $2.48 per net ton, in lieu of current sixth class rate of 25 cents per 100 pounds. Reason: comparable with rates applying to other points.

WESTERN TRUNK LINE NEW APPLICATIONS

Docket D-25-165—Lime, plaster, calcined; stucco and/or wall plaster in mixed carloads with cement, hydraulic, Portland or natural, etc., from origins in WTL territory as published in WTL Tariffs 132-J and 133-J, to stations in Minnesota, North Dakota and South Dakota on the G.N., M.St.P.&S.S.M. or N.P., where the proposed basis is not now applicable on account of exception No. 1 contained in Item 185-I of WTL Tariff 132-J and Item 165-D of WTL Tariff 133-J. Proposed: 3¼ cents per 100 pounds higher than the applicable carload rate on cement. (By shipper.)

Docket E-41-700—Stone, crushed, as described in Item 3780-A, WTL Tariff 18-R, from Dell Rapids, S. D.. to Osceola, Neb. Rates—Present: 15c per 100 pounds, Item 3780-A WTL 18-R. Proposed: Cancelled, combination rates to apply.

Docket E-8-609—Clay, not otherwise indexed by name, crude or ground, minimum weight 60,000 pounds, except that when car of less capacity is furnished for carrier's convenience, minimum weight will be marked capacity of car used, from Medicine Bow and Rock River, Wyoming, to Oklahoma City and Tulsa, Oklahoma, Dallas and Houston, Texas. Rates —Present: Cheyenne, Wyo., combination, viz: Oklahoma City 40 cents, Tulsa 42 cents, Dallas 44 cents and Houston 47 cents per 100 pounds. Proposed: Oklahoma City 33 cents, Tulsa 33 cents, Dallas 36 cents and Houston 40 cents per 100 pounds. (By shipper.)

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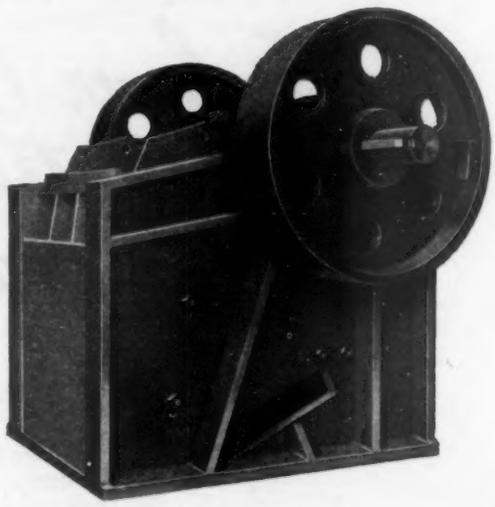

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NEW MACHINERY and SUPPLIES

● New Blasting System

A new system of rock blasting, promising increased tonnage, reduced secondary blasting and cleaner back break, is announced by Atlas Powder Company, Wilmington, Delaware. The blasting system called the "Rockmaster" system is the first Atlas postwar technical development for explosives users according to a statement by F. S. Pollock, vice president and general manager of the Atlas' Explosives Department.

The Rockmaster system is designed around an entirely new type of electric blasting device also named Rockmaster. The system requires changes in blasting procedure, such as spacing burden and the selection of the explosive for the particular rock formation. The new technique has been under field tests for several months and results indicate three very definite advantages all contributing to substantially increased efficiency in rock blasting.

A detailed description of the Rockmaster System and an account of the results obtained in field tests are contained in an exclusive report beginning on page 96 of this issue of PIT AND QUARRY.

● Industrial Engines

Hall-Scott industrial engines, series 400, manufactured by the Hall-Scott Motor Car Company of Berkeley, California, are offered in three models, 470-0, 480-0 and 400-0, of the six-cylinder, overhead-camshaft-and-valve type. A force-feed gear-type pump supplies oil to all working parts; the carburetor burns butane, natural gas or gasoline. The one-piece, replaceable cylinder head is chrome nickel iron, as is also the cylinder block. The crankshaft has seven main bearings of chrome nickel alloy, heat treated, counter-weighted and statically and dynamically balanced.

Connecting rod bearings have replaceable shells 3 inches in diameter and 2⅛ inches long (not including chamfers or fillets). Pistons are of aluminum alloy, and piston pins are of the floating type, case-hardened and ground. Cooling is by centrifugal or gear pump.

● Detonator Protection

E. I. DuPont De Nemours & Company, Inc., has announced that the entire line of its instantaneous and delay electric blasting caps now is equipped with nylon-insulated wires and rubber plug closures. The nylon plastic insulation reduces misfires resulting from current leakage, says DuPont. Vivid contrasting colors increase visibility and minimize the possibility of error in hooking up. Rubber plug closures, tightly crimped into place, assure maximum water resistance, are shorter than former types, and make priming easier and safer.

● Manganese Electrodes

A-C Nickel Manganese, A-C Mo Mang Manganese, X2, and X3 electrodes are new additions to the arc welding electrode line recently announced by the Allis-Chalmers Manufacturing Company, 575, Milwaukee, Wisconsin. The A-C Nickel Manganese and the A-C Mo Mang Manganese have wide application in the mining, cement, and railroad industries for repair and building of worn equipment, according to Allis-Chalmers. Characteristics of the weld deposit allow it to work-harden to 550 Brinell.

Hard-surfacing electrodes X2 and X3 are used to protect parts subject to extensive wear, the X2 for severe abrasion and mild impact and the X3 for severe impact and mild abrasion. They are available in assorted sizes, both bare and coated, the coating being a combination, suitable for both a.-c. and d.-c. welders. X2 and X3 electrodes are available in assorted sizes, with combination coating only.

● Key-Locked Brake Block

Raybestos-Manhattan, Inc., announces its new, patented Key-Lok brake block,

Brake block with "fishtail" keepers.

claimed to possess quick replacement features. It consists of lateral "fishtail" metal strips or keepers in which bolts are inserted, spaced to fit in the brake bands. These keepers slide into fishtail slots cut into the block.

Raybestos-Manhattan claims these eight advantages for the Key-Lok brake block: can be changed quickly; eliminates danger of springing bands; eliminates deposits of foreign matter in bolt holes; prevents scoring; increases area of friction surface; strengthens holding ability of block to shoe; is adaptable to both internal and external applications; reduces installation and maintenance costs.

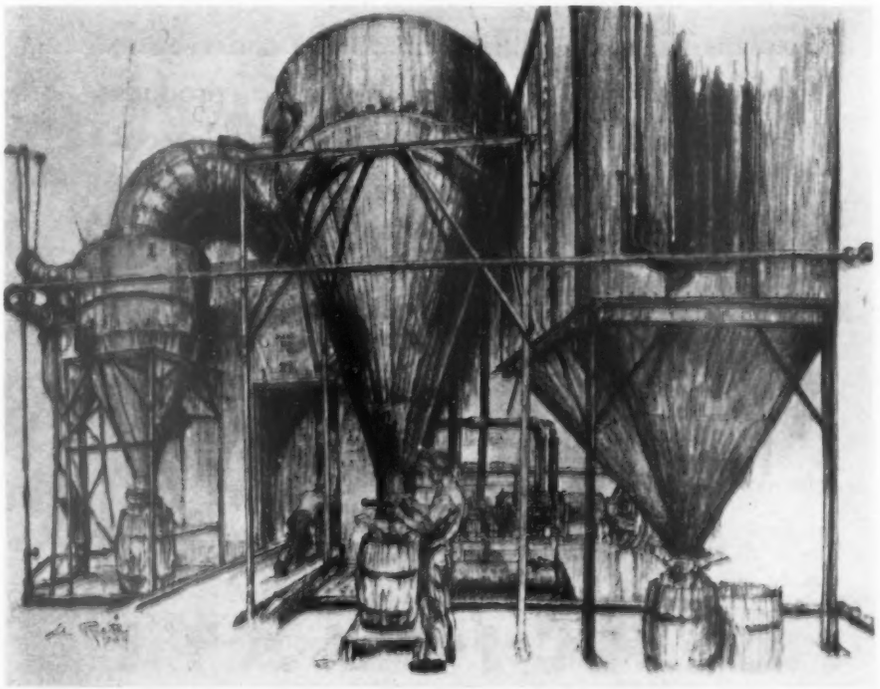
● Rust Preventives

The Sinclair Refining Company, Inc., has developed a new series of rust preventives, originally destined for government equipment, but now available for civilian uses. Listed in the series are Rust-O-Lene A,B,C,D,E,F and G, Opaline RP 10 and 30, and Cercax. (The last-named is a high-melting-point, microcrystalline wax.) A complete chart for the use of the rust preventives appeared in *The Service Factor*, a Sinclair publication.

● Attrition Mill

The Eagle Mill, an attrition mill developed by the International Ore Corporation of New York for the Eagle Pencil Company, Inc., is hailed by the manufacturer for its performance in grinding crystalline graphite to a fineness as low as 1 to 2 microns without the use of moving parts in its construction. (One micron equals 0.0000394 inch.) Such results are accomplished by "the action of a gentle flow of particles carried by a medium of air in an extremely long pipe, the inlet of which is under pressure and the outlet end under suction."

Among the advantages cited by International are the following: The particles obtained are of the smallest size and of unspoiled inner structure; the product is practically free of any contamination; particles are broken up along natural lines of cleavage; no heating of material develops; any predetermined micron size can be achieved; operation of the mill is dust-free, waste-free and automatic.



Attrition mill grinds to fineness of 1 to 2 microns.

● Engine Speed Indicator

An instrument said to combine the features of an ordinary speedometer with those of a tachometer and adds instructions governing various engine speeds is new offered by the White Motor Company under the name of "Economy Range Finder." With this device on the instrument panel the driver reportedly can keep the truck engine within its most efficient range of operation.

Range Finder Indicators.

The White Economy Range Finder definitely helps drivers in shifting gears, saving fuel, conserving trucks, and making schedules, the manufacturer claims. A spiral white line for each transmission gear is offered on the dial, and this is combined with a scale of r.p.m. printed on the speedometer pointer. As the speedometer pointer moves around the dial, the edge of the pointer crosses the spiral white line for each gear, showing the r.p.m. A white area on the pointer indicates the ideal operating range from 1,700 to 2,400 r.p.m., and at either end is a red area which indicates when the engine is operating outside the proper range. When the pointer reaches the outer end of the spiral line for any gear, the engine speed (noted in the red) will be 2,800 r.p.m., at which the governor is usually set. As this recommended maximum is approached, the bearing loads, piston speeds, and vibrations are increased, thereby tending to shorten the life of the engine. By the same token, the red at the lower end of the pointer shows when the engine is laboring and in need of relief through shift to a lower gear. Such a shift will prevent strain and excessive wear by allowing the engine to operate more easily at a higher speed. As steeper grades slow the engine down into the 1,100 to 1,400 r.p.m. range, the greater load on bearings, pistons, and rings is much the same as when the maximum speed of 2,800 r.p.m. is exceeded.

When the pointer crosses a white line at the outer end of the line, it indicates that the recommended maximum r.p.m. has been reached and that the driver should shift into the next higher gear. And when the pointer crosses a white line at the inner end, it suggests a shift into the next lower gear.

● Engine Lubricant

A new internal combustion engine lubricant having unusual advantages over mineral oil, particularly for cold weather use, has been announced by Carbide and Carbon Chemicals Corporation, a Unit of Union Carbide and Carbon Corporation. This lubricant can be manufactured to any desired viscosity and is wax-free. Pour-points vary from —30 to —80 degrees F. Flash points range from 300 degrees F. up. The new materials have densities approximating that of water. Carbon residue values are less than 0.01 per cent., regardless of viscosity. The lubricant is characterized by low change of viscosity with change in temperature, having viscosity indices in the range of 140 to 160. The new lubricant contains no petroleum oils. The manufacturer declares that it practically eliminates sludge and varnish formation in the engine.

● Heavy-Duty Trucks

Two new models of heavy-duty trucks, incorporating 10 forward speeds, 4 reverse speeds, and all-wheel drive, are to be in production soon by the Marmon-Herrington Company, Inc., of Indianapolis, Indiana. The larger model, MH555-4, will employ a 131-horsepower engine, 161-inch wheelbase with a gross loaded weight of 27,000 pounds, and 11.00x20 tires. MH440-4, the smaller model, will have a 118-horsepower engine, 158-inch wheelbase with gross loaded weight of 22,500 pounds, and 10.00x20 tires.

● Coated Alloy Electrodes

For the hard-facing of heavy equipment exposed to high temperatures, abrasion, corrosion and impact, or for smaller units where the use of oxy-acetylene is precluded, the Stoody Company of Whittier, California, recommends its two new coated alloy electrodes, Stoody 6 for impact applications, and Stoody 1 for sliding abrasion conditions. Weld deposits of these alloys are said to have the same characteristics as oxy-acetylene welds, if used with a special dipped coating and either a.c. or d.c. equipment. Normal operating features are, according to the manufacturer, a rapid burn-off rate with low penetration and high build-up.

IN PEACETIME PRODUCTION PLANS

Road construction blue printed in post war plans will cost millions of dollars and require aggregate in great quantity. To produce your share, you will require dependable conveyor belts, transmission belts and hose.

To be sure of big tonnage and a low belt cost per ton, get Cincinnati on the job right now. Buy Cincinnati . . . go get profits.

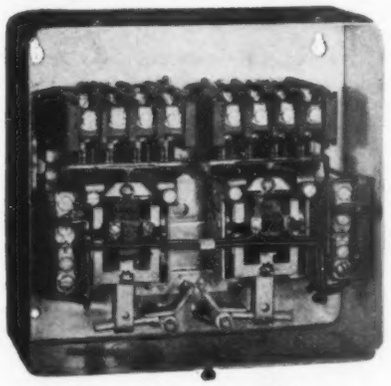
THE CINCINNATI RUBBER MFG. CO.
CINCINNATI, OHIO

CINCINNATI
TRANSMISSION - CONVEYOR BELTS · HOSE

● Reversing Starter

A new a.c. magnetic reversing starter, featuring a semi-interference-type mechanical interlock, has been announced by the Industrial Control Division of the General Electric Company. Available in sizes 0 and 1, the new starter is designed for full voltage starting of squirrel-cage induction motors, although it can easily be used for reversing service when combined with a reduced voltage starter.

Easy to adjust, the new semi-interference-type mechanical interlock prevents



Magnetic reversing starter.

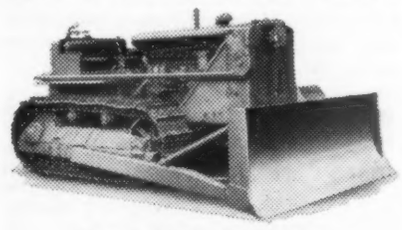
the closing of one contactor while an arc is maintained on the other, thus averting a short circuit through the arc and the resultant burned contacts and blown fuses. In addition, it is claimed, the interlock arm of the closing contactor assists the interlock arm of the opening contactor in reaching its fully-opened position. These interlock arms are case-hardened and their underside faces are buffed and polished to provide long life.

Other features of the starter listed by G.E. are undervoltage protection when used with a push-button station or other momentary pilot-circuit device; undervoltage release when used with selector or limit switches; and tamperproof, self-contained overload relays which allow the motor to operate up to its maximum safe temperature before tripping it off the line.

● Cable-Controlled Dozer

"Caterpillar" cable-controlled bulldozers and scrapers, announced as an addition to the company's line of products more than a year ago, are now in production as the result of a lifting of W.P.B. restrictions.

Delivery of bulldozers for "Caterpil-



Now available to civilians.

lar" Diesel D8, D7 and D6 track-type tractors is scheduled late this year, with delivery of the scrapers in several sizes scheduled for early 1946.

The new products, which have been subjected to thorough testing on the company's proving grounds and at numerous locations throughout the United States, will be sold and serviced through "Caterpillar" dealers.

Cited by the manufacturers of the new units are the following advantages: balanced design, great capacity, rigid construction, elimination of "A" frame, reinforced blade, easy digging, enclosed operating cables, long-life cutting edges, easy blade adjustments, quick mounting, correctly grooved sheaves, long cable life, safe operation, fine visibility, high lift, low drop, straight or angling cut, unit manufacture and one service source.

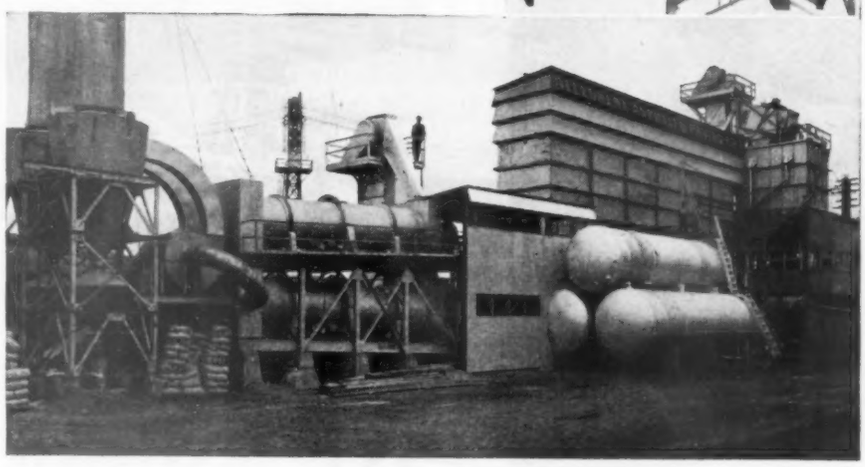
● Rust-Resisting Oils

Gulf No-Rust Engine Oil, a crankcase lubricant developed by the Gulf Oil Corporation, Pittsburgh, Pennsylvania, is intended for service in engines of equipment which have been put in storage, or those of intermittent operation, as well as for engines in stand-by equipment.

Gulf No-Rust Number 1 is recommended for rust-proofing parts of contractors' equipment and other machinery which is exposed to corrosion and rusting by the weather. Tests in the Gulf Research Laboratory have shown that treated polished cold-rolled steel panels were free of rust after exposure to the equivalent of 200 days of outdoor weather conditions, and 38-days of exposure in a dense fog of salt brine. Satisfactory application to equipment requires heating of the oil first and then applying with a swab.

Another product, Gulf No-Rust Number 3, is also provided as a corrosion and rust preventive. This oil gave protection after a 141-day test in outdoor weather conditions and 39 days in a salt brine fog. Gulf No-Rust Number 3, is satisfactorily applied with a brush.

From the smallest portable patch plants ➧ to the largest stationary models ➧



H&B ASPHALT PLANTS ARE ENGINEERED AND BUILT TO GIVE TROUBLE-FREE, ECONOMICAL PERFORMANCE UNDER THE MOST SEVERE OPERATING CONDITIONS

Dependable performance—under a wide variety of operating conditions—is engineered and built into every Hetherington & Berner Asphalt Plant. As America's first builders of bituminous mixing machinery, Hetherington & Berner take pride in building equipment that will do a good job and prove a profitable investment for its owner. Every H. & B. plant is completely erected and checked at our factory before shipment.

Now that our war job is over, we are back to normal production of H. & B. plants of all types. Literature on H. & B. portable or stationary plants will be sent on request.

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FOR BEST RESULTS — BATCH MIX • HOT MIX

● New Rotary Pumps

The Worthington Pump & Machinery Corporation of Harrison, New Jersey, offers its line of rotary pumps of the GR type, in eight standard sizes, covering a capacity range of approximately 5 to 1,500 gallons per minute. This type of pump is said to be unique because it can handle small capacities up to 300 pounds pressure on oils and fluids of high viscosity which cannot be handled by a centrifugal pump; and it can also be used for large capacities and high viscosities that usually are handled by much larger reciprocating pumps.

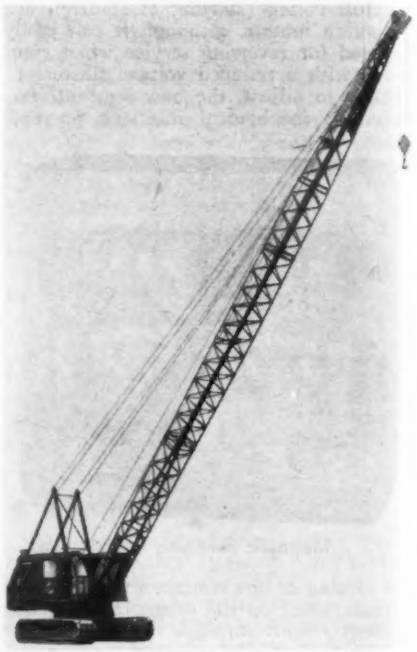
The unit consists of two accurately cut continuous double helical or herringbone gears mounted on heavy steel shafts carried in high-capacity HY-LOAD roller bearings. Many modifications of the pump have been built, for example, units of special steel for use on hot oils and asphalt at temperatures of 600 degrees F. or higher.

● Electrode Reference Chart

R. G. LeTourneau Inc., Peoria, Illinois, has released for service men and mechanics a quick-reference chart (Form WT-111) covering the five types of Tournaweld electrodes. The three special repair and maintenance electrodes, Tournaweld RW, Tournaweld HF, Tournaweld 78, and two general purpose production-type weld rods, Tournaweld 77, and Tournaweld 88, are listed with their built-in characteristics and pursposes, available sizes, distinguishing colors, and the proper current for the most efficient operation.

● New Lines of Cranes

The Manitowoc Engineering Works of Manitowoc, Wisconsin, has developed two new lines of digging units — the Speedcrane, series 3000 and 3500. Both are mounted on crawler treads. Model



One of new line of cranes.

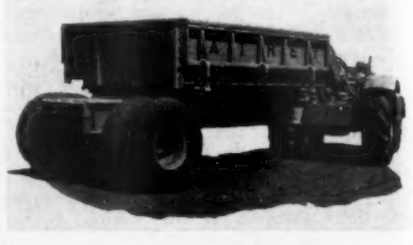
3000 Speedcrane is available with power plants ranging from those normally associated with 1¾-cubic-yard machines (Model 3000-A) to those for 2-cubic-yard types (Model 3000-B). The machine has a 30-ton lifting capacity at 12-foot radius; a 50-ton capacity model 3000-B special is also available for heavy steel erection, etc. It handles a 2-cubic-yard bucket on an 80-foot boom. Intermediate inserts are furnished in lengths of 5 to 50 feet for the welded alloy steel booms. The boom hoist is of worm type, powerdriven in either direction. Tagline is obtainable in two styles—boom-mounted Rud-O-matic or counterweight-multiple sheave type, mounted in cab rear pocket.

Treads are 30 or 33 inches wide and crawler lengths 14 feet, 4 inches; 16 feet, 4 inches; and 18 feet, 4 inches; the last is for abnormal conditions.

Model 3500 is of 60-ton lifting capacity at 12-foot radius; it handles a 2½-cubic-yard bucket on an 80-foot boom. Treads are 38 inches wide; otherwise the tread specifications are the same as for the 3000 models.

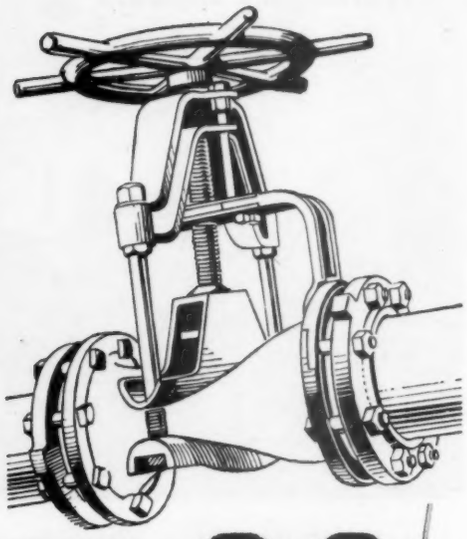
● Two-way Dump Trailer

Expanding their present line of Athey loading and hauling equipment, the



15-ton capacity trailer.

MASSCO-GRIGSBY *Pinch* VALVES



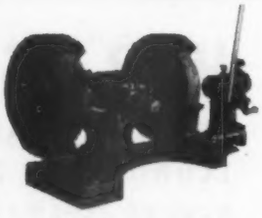
NO METAL CONTACTS PULP OR LIQUID

Useful for solutions which are highly corrosive or which crystallize at normal temperatures and must be handled at up to 300 F; or for mixtures of solutions or solids which are both corrosive and abrasive.

Recommended for transfer lines, controlling flow in plant, delivering product to storage or cars or for handling fine dry materials. Valve shuts tight on solid particles.

These valves resist wear **more** than metallic parts of gate or plug valves. No packing glands. Freezing temperatures will not destroy sleeve. Easy to operate.

1", 2" and 3" for continuous pressures to 100 lbs.; 4", 6", 8", 10" and 12", up to 150 lbs. Send for illustrated folder.



MASSCO Jr. Rock Bit Grinder

Other Products — MARCY Ball, Rod and Tube Mills; Genuine WILFLEY Concentrating Tables; MASSCO-McCARTHY Hot Millers; Rock Bit Grinders; Belt Feeders; Density Controllers.

DENVER
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The Mine & Smelter Supply Co.

CANADIAN VICKERS, LTD.
MONTREAL
W. R. JUDSON
SANTIAGO, LIMA

Athey Products Corporation of Chicago has announced the addition of a new rubber-tired unit, to be known as the PD-10 Trailer.

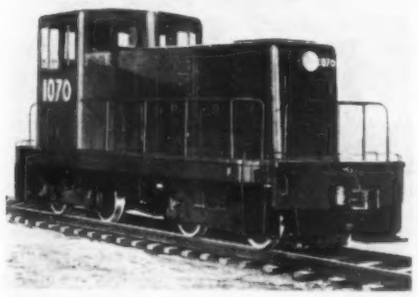
This new two-way dump trailer is designed for use with the "Caterpillar" DW-10 tractor for high-speed hauling on construction, mining and other earthmoving projects. The PD-10 heavy-duty trailer has a maximum capacity of 15 tons. It was designed to take advantage of the weight and power of the DW-10 tractor.

The hydraulically-controlled PD-10 has an approximate shipping weight of 15,000 pounds. Its heaped capacity is 10 cubic yards, and struck, 8 cubic yards. In dimensions, the PD-10 trailer alone is 21 feet long, 9 feet 4 inches wide, 7 feet 2 inches high at the rear, and 7 feet 10 inches high at the front. It discharges its load from either side at a 55-degree angle.

● Heavy-Duty Locomotive

First production units of a new-type Diesel-electric locomotive suitable for both heavy yard duty and road service are nearing completition at General Electric's Erie, Pennsylvania, works. The new locomotive will be rated 600 horsepower, will weigh 70 tons, and will have a top speed of 55 miles per hour.

The new model will be used mainly for yard switching, scheduled road hauls,



Diesel-electric locomotive.

and transfer work. It is adequately powered, G. E. announces, for passenger-station switching and light traffic passenger service. It is said to be particularly adapted for freight and passenger service on railroad lines where roadbed and rail weight require limited axle loadings.

The locomotive is powered by a six-cylinder Diesel engine rated 600 horsepower at 1,000 r.p.m. The four motors and generators making up the electric drive were specifically designed by G. E. for the new locomotive on the same basic principles which have been proved in the larger Alco-G.E. units.

● Tire Inflating Liquid

Tires filled 100 per cent. with Goodyear's Solution 100, are claimed to have increased traction and constant inflation pressure on vehicles traveling under 10 miles per hour, and not engaged in carrying pay-loads. The solution, a product of the Goodyear Tire & Rubber Company, Inc., is not recommended for trucks, cranes, trailers and earthmoving equipment carrying loads, or for any vehicle, loaded or unloaded, which exceeds a speed of 10 miles per hour.

● Industrial Hose

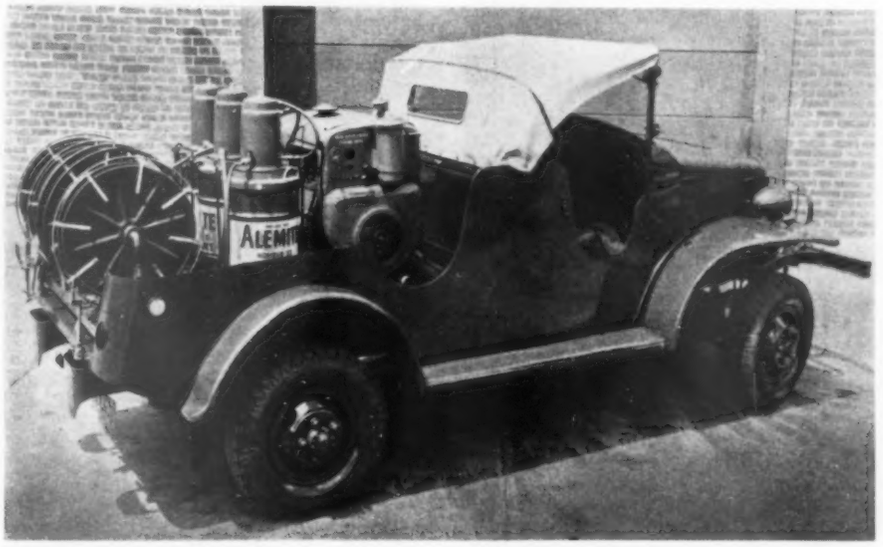
The Hewitt Rubber Corporation has announced the production of a revised and improved line of industrial hose, with rearrangement of brands more adequately to serve the users of these products.

"Monarch" is the new brand name for the top quality which formerly was identified as "Maltese Cross." The new high grade is "Ajax" brand; and all utility or general service hose is identified as "Conservo." The widely known double-barrel hose that Hewitt has developed for the welding industry will continue to be known as "Twinweld."

The new brand designs were adopted to enable jobbers and dealers quickly to identify each quality and type of hose.

● Portable Lubrication Unit

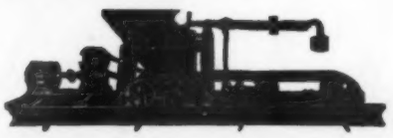
The illustration below shows a portable lubrication unit, including the Number 20 Schramm portable engine-driven compressor. It is used for supplying high-pressure lubrication for construction equipment, trucks, cars and farm machinery. The unit provides both high- and low-pressure lubrication. It also inflates tires on all pneumatic-tired vehicles or equipment, dispenses gear lubricant or motor oil or applies rust-preventive or other surfacing material.



Mobile lubrication unit providing high and low pressure.

THE MODERN "EXPEDITING MACHINE"
for handling raw and finished materials

SCHAFFER
POIDOMETERS



KEEP PRODUCTION LINES
OPEN and MOVING

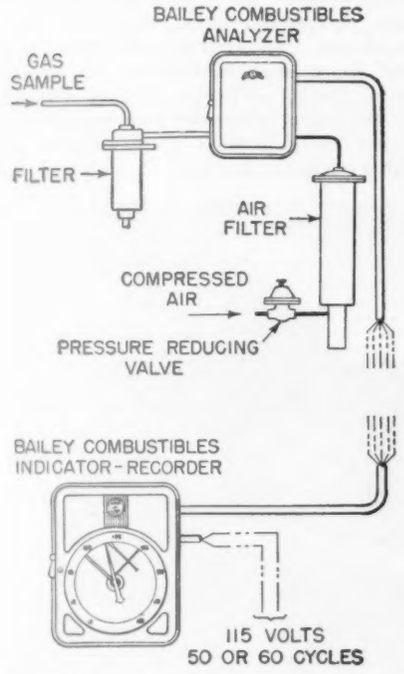
Hundreds of industrial and military plants throughout the country rely on SCHAFFER Poidometers for maximum speed and accuracy in processing bulk materials. These automatic weighing, feeding and proportioning machines insure high product uniformity, continuous high production and low operating costs.

Write for Catalog No. 5

SCHAFFER POIDOMETER CO., 2828 Smallman St., Pittsburgh 22, Pa.

● Combustion Control Unit

A new automatic analyzer and recorder for indicating, recording and controlling the combustibles content of a gaseous mixture, has been developed by



the Bailey Meter Company, Cleveland 10, Ohio. This instrument has been successfully applied to precision control of furnace atmospheres and chemical processes, as well as to combustibles measurements in various industries.

The analyzer and recorder provide a continuous graphic analysis almost instantly, and they are said to be responsive to changes of .05 per cent. combustibles.

Pneumatic control or electric alarm contacts may be provided on both one- and two-pen recorders. A two-pen recorder utilizes separate analyzers, so that the speed is not impaired by switching, and the two records are independent of each other.

Combustibles recorder-controllers applied to process furnaces operating with reducing atmospheres are said to permit finer measurement and control than has heretofore been considered possible. This results in greater uniformity and higher quality of product, as well as greatly increased furnace economy.

● Utility Suction Hose

Suction hose "for excavating and general utility service" is offered by the B. F. Goodrich Company in six grades, each in a variety of sizes. Spiralock is featured as a smooth-bore hose with a light wall, recommended for any degree of suction and discharge pressures up to 30 pounds per square inch. Types 33 and 81 and Summit are of medium-wall construction, while Type 44 and Cascade are of heavy-wall construction. All except Summit have a wire insertion.

● Wire Rope Clamp

An improved method of holding wire rope, the Safe-Line Wire Rope Clamp, has been put on the market by the National Production Company of Detroit. In tests that have been made of its holding power, the National Safe-Line Wire Rope Clamp has never slipped; it will outpull the strongest rope, according to the manufacturer.

The Safe-Line method of holding wire rope eliminates slower and costlier splicing and serving, and requires only one-

View of rope clamp open.

fourth the time necessary to make a U-bolt application. Another advantage is that one Safe-Line clamp usually does the job of the three or more U-bolts usually needed. The use of Safe-Lines saves wire ropes as well as workmen's time by minimizing rope or sling breakage. This is accomplished by the equal distribution of the pressure on the rope over a large area, rather than pressure at one point only. The powerful grip results from double spiral splines that fit each wire and strand. This clamp also makes it easier to lock a thimble in a tight position.

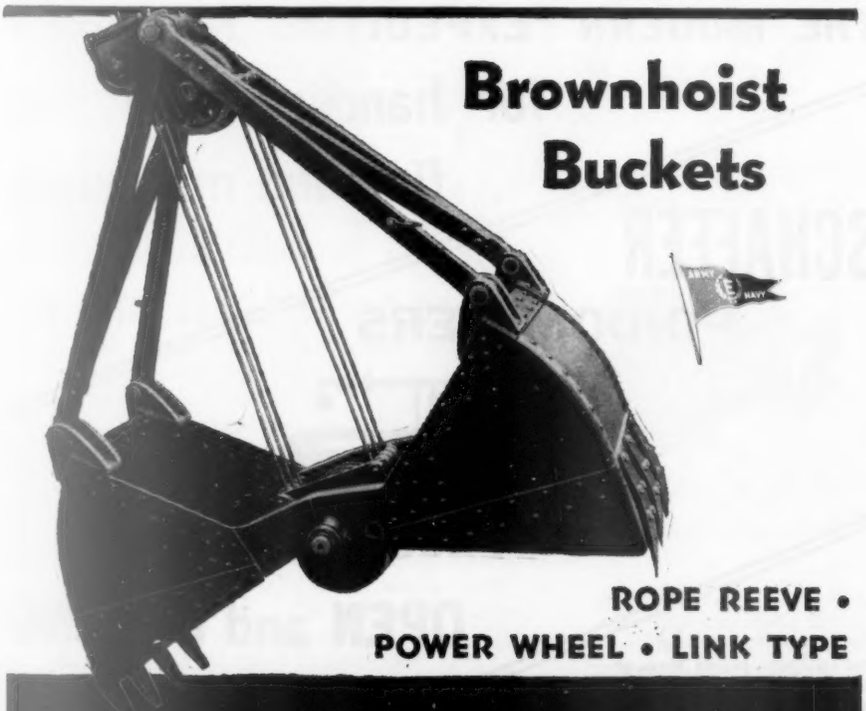
Another important factor is protection for the workman against personal injury. A Safe-Line completely encloses the sharp wire ends, preventing scratching and cutting of hands and arms. The smooth, rounded Safe-Line design also prevents the workman's clothing from catching and the line from fouling.

Safe-Wire Rope Clamps are made of high-tensile-strength alloy steel forgings and master-coined to fit rope sizes 1/16 to ¾ inches. They are simple to adjust as the rigging stretches and can be used repeatedly.

● Air Cleaning Tube

Cleaning tube.

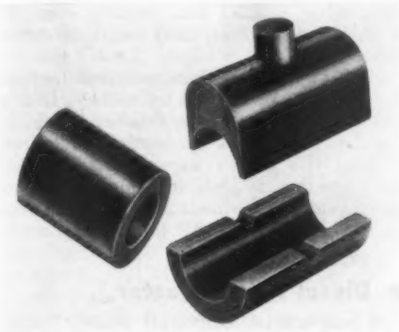
Aerotec, the trade name of a new type air cleaning tube developed by the Aerotec Company, White Plains, New York, is used in multiples up to any desired capacity for reclaiming valuable powders, intakes on Diesel and gasoline engines, and cleaning dangerous dust-laden air in industrial and chemical plants. The clean air is exhausted from the central tube, while the dust is precipitated from the bottom. A single tube has a capacity of 30 cubic feet per minute at 4-inch wire gauge resistance.



Handling ore, gravel, coal or dirt Brownhoist Buckets do a better job because: 1) Larger sheaves reduce rope wear, 2) Heavy carbon-steel digging lips take deep clean bites, 3) Extra-sturdy construction insures long-life. Write to Industrial Brownhoist Corporation, Bay City, Michigan. Offices in New York, Philadelphia, Pittsburgh, Cleveland and Chicago.

● Self-Lubricating Bearing

Morganite self-lubricating bearings, manufactured by the Morganite Brush Company, Inc., Long Island City, New York, are available in compositions of carbon, graphite or both. They are also



Carbon or graphite bearings.

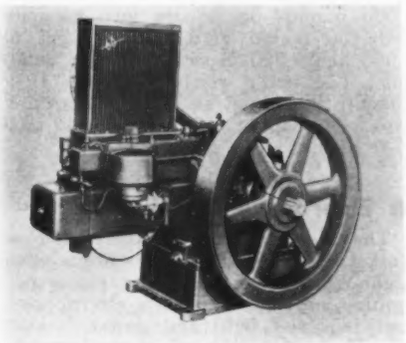
supplied, if desired, with various metallic contents for special applications. Bearings of these materials, says the Morganite company, have unique properties —self-lubrication, immunity to acids, alkali and most solvents. They have low coefficients of friction and expansion. In operation, Morganite bearings glaze cooperating surfaces with a protective coating.

Among other advantages cited are the following points: The bearings are readily machinable but may be molded with tolerances to .001 inch. They can be machined to close accuracy when desired, or superfinished. Outside diameters of ⅛-inch to 15-inch are permissible. They can be supplied in any shape—complex sleeve or split types, with any contour required. They may be plated, take molded-in fastenings and can be shrunk, press fitted, or vulcanized to rubber.

Operating speeds to 50,000 r.p.m. with thrust loads to 30 pounds per square inch, or loads to 2,000 pounds per square inch at slower speeds are possible. Their immunity to high heat (to 850 degrees F.) has resulted in wide use in steam turbines, drum dryers and wherever ordinary lubrication usually is impaired or a contaminating influence.

● Horizontal Pumping Engine

Model C-66, a new horizontal pumping engine of the Climax Engineering Company of Clinton, Iowa, is described by the manufacturers as a heavy-duty,



Heavy-duty engine.

single-cylinder, vapor-cooled, valve-in-head-type engine, rated at 13.2 horsepower (for continuous service) at 650 r.p.m. Among the "14 points of superiority" listed by Blue Streak engine builders for the C-66 are the following: replaceable wet cylinder sleeve; mechanically operated intake valve; positive forced-feed lubrication; non-breathing oil filler; specially designed governor to make instantaneous adjustment, 300 to 700 r.p.m.; oversize connecting rod, insuring long life. The single heavy flywheel, with Standard Twin Disc power take-off, it is pointed out, uses standard stock sheaves and eliminates waiting for specials. Overall dimensions, 39⅝ inches by 43⅛ inches; weight, 1,575 pounds.

● Hard-Surfacing Electrodes

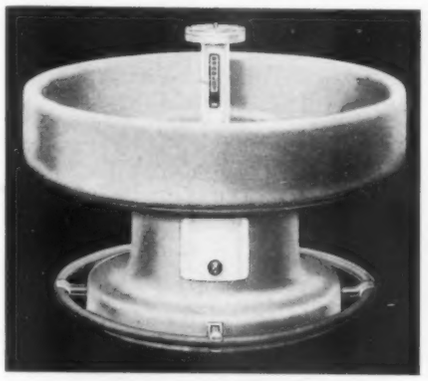
Ranite "A," "B" and "C," offered by the Rankin Manufacturing Company of Los Angeles, are described as smooth-flowing, hard-surfacing electrodes which have applications in the fields of rock products and cement, dredging and mining. Ranite "A" (blue tip), average hardness 25-30 on Rockwell C scale, is rated highly resistant to shock and is recommended for conditions of angular shock or other unusual strains which tend to break off pieces of the harder deposits.

Ranite "B" (yellow tip), average hardness 44-50 Rockwell C, according to Rankin, lends itself to all-purpose hard-surfacing. Deposits reportedly have great resistance to abrasion, as well as substantial toughness. "B" has been used successfully on crusher rolls and jaws, sand racing needle valves, shafts, etc.

Ranite "C" (red tip) average hardness 60-62 Rockwell C, is recommended for such work as restoring cutting edges of grader blades, bucket teeth, etc.; surfacing needle valves, shafts, etc.

● Personnel Wash-fountain

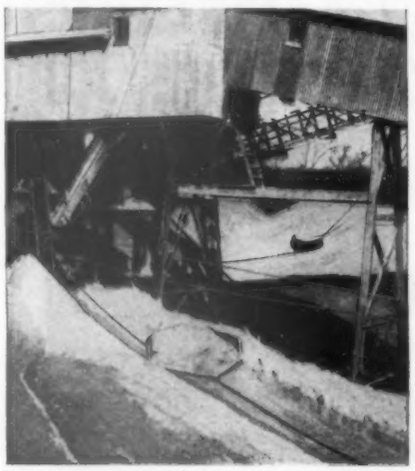
Designed to relieve congestion in washrooms, the Bradley wash-fountain is offered by its manufacturers, the Bradley Washfountain Company of Milwaukee, in several styles and types of material.



One type of wash fountain.

The precast units are composed of approximately 85 per cent. stone and 15 per cent. binder. From eight to ten persons can wash simultaneously. The makers cite these advantages: low installation and maintenance costs; economy in space, metal, water; simple mechanism (hand or foot-pedal control) and plumbing; complete sanitation. The fountains are made in 36-inch and 54-inch-diameter sizes.

CUT YOUR HANDLING COSTS—



EXPLANATION OF PICTURE—

Two small Crescent Scrapers handle stockpiles covering ground on both sides of a conveyor running from mill to loading station at a dolomite processing plant.

The scraper in the foreground of the picture is stocking out screenings that are spouted onto the ground from the conveyor. This product is sold to the fertilizer trade with demand coming mainly in the Spring months. Upwards of 25,000 tons accumulates between seasons. The scraper piles up this surplus during nine months of the year and then works overtime in the Spring to retain the stored material.

The other scraper on the far side of the conveyor, has a different task. It stockpiles the overflow of dolomite when the crushers are producing more than the kilns can take care of and it reclaims from the pile whenever quarry or crusher operations are interrupted.

with a streamlined CRESCENT Scraper

IN gravel excavation, stripping and stockpiling Sauerman Crescent scraper buckets have proved their ability to dig and convey large tonnages of gravel, clay, loose ore, etc., at costs of a few cents per ton.

Secret of this efficiency is in the streamline design of this unique scraper. A "Crescent" penetrates hard materials with ease of a plowshare, and both in digging and hauling it requires less line-pull than any other scraper of equal capacity.

For complete data on the various sizes of Crescent scrapers, methods of operation, etc., write for Catalog 19-J.

SAUERMAN BROS., Inc.

534 S. CLINTON ST., CHICAGO 7, ILL.

● Vertical Drip-Proof Motor

The Crocker-Wheeler Division of Joshua Hendy Iron Works, Ampere, New Jersey, announces a new addition to the company's line of protected-type a.c. motors. The newcomer, a vertical drip-proof motor which is rated at 40 C rise continuous duty with a 15 per cent. service factor, is designed for operation from 60 or 50 cycle, 3- or 2-phase circuits at all standard voltages. At present a NEMA "B" flange-type mounting up to and including the "284" frame, and a NEMA "C" face type mounting up to and including the "326" frame are available.

Vertical motor.

All ventilating openings of this new line of motors are shielded against the entrance of dripping liquids and falling particles. Oversize ball bearings are provided to carry thrust in addition to the rotor, and the use of the company's patented centrifugal bearing seal permits the use of softer grease for better lubrication and longer bearing life.

A new recessed junction box, which provides ample room for making electrical connections, is employed in the design of the motor. The Crocker-Wheeler ALUCAST rotor, with bars, fans and end rings cast in one operation from aluminum alloys, is used. Other features include heavy cast frame construction and coils protected with VINYLASTIC insulation.

● Front-Dump Scraper

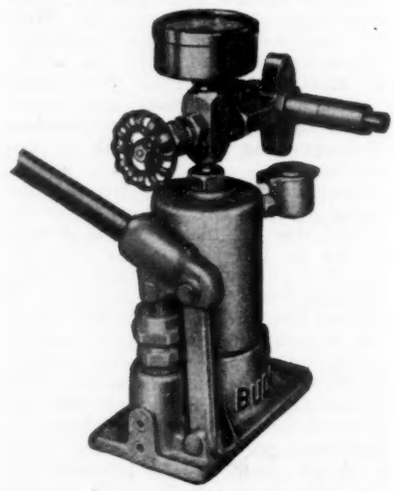
One of the first post-war equipment units to be released by LaPlant-Choate Manufacturing Company, Inc., of Cedar Rapids, Iowa, is a small 2-yard front-dump scraper, Model CW-2. This scraper is the improved industrial counterpart of the wartime air-borne scraper which was used in large quantities by the Air-borne Engineers for clearing roads and airstrips in inaccessible regions.

The new LaPlant-Choate Model CW-2 weighs only 2,550 pounds. The two rear wheels can be located either inside or outside the cut, and it can make a full 90 degree turn or less within a circle diameter of 20 feet. The hitch is designed for operation behind high-speed rubber-tired industrial tractors. When fully loaded, weight is lifted from the tractor's front wheels and much of the weight of the load is centered on the tractor's driving wheels for maximum traction. Bowl and apron are operated hydraulically by LaPlant-Choate's air-borne pump, the same unit used to operate the military tank-dozer. A three-position valve enables the cutting edge to be held in position and exert effective down pressure.

Other operating features cited include the ability to make cuts up to 11½ inches and to produce smooth finished work. It can be loaded in all scraper material without the aid of a pusher, or loaded from overhead. Due to the low center of gravity the scraper will not roll over on any slope that will hold the tractor.

● Diesel Nozzle Tester

A new model Universal Diesel Nozzle and Injector Tester, announced by the Buda Company of Harvey, Illinois, is a portable unit designed for use with all popular makes of Diesel engines.



Measures injector opening pressures.

According to the manufacturer, any mechanic or Diesel engine operator can measure injector opening pressures with it, determine accurate adjustment, check spray pattern for uniformity, and detect other irregularities such as sticking needle valves, dribble and leakage around valve seats.

The Buda Universal Diesel Nozzle Tester is equipped with a standard hydraulic pressure gauge, 3 11/16-inch dial, 3,000 pounds per square inch capacity and 100 pound gradations. Gauges of 5,000 and 7,500 capacity are also available. The tester weighs less than 19½ pounds, including an all-steel carrying case, one adaptor and removable 12-inch steel handle.

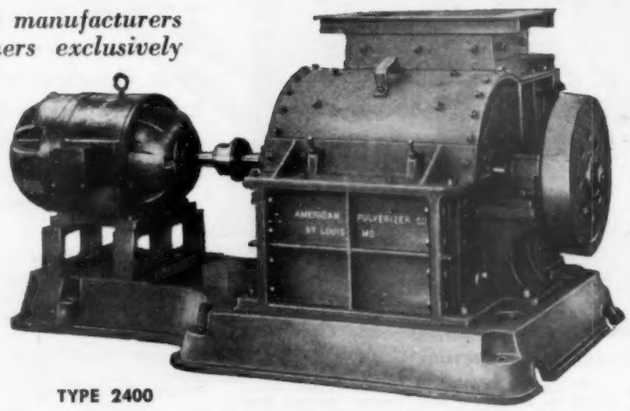
● Emergency Lighting Unit

The Electric Cord Company of New York City offers industry its Minuteman Light-Warden, an automatic emergency lighting unit for use when electric current fails and light and power is shut off. The unit, it is claimed, instantly snaps into action, illuminating more than 10,000 square feet for approximately 4 hours. According to the manufacturer's description, the instant normal current is resumed, Minuteman lamps automatically go out, and a built-in charger restores power to the battery. The unit is self-contained and portable.

AMERICAN *HammerType* CRUSHERS
CUSTOM-BUILT TO FIT THE JOB

Built by manufacturers of crushers exclusively

- CAPACITIES AND TYPES FOR MANY OPERATIONS
- LOW OPERATING COST
- RESISTANT TO CLOGGING
- WIDE RANGE OF REDUCTION
- EASY ACCESSIBILITY
- SECTIONAL CONSTRUCTION FOR EASY REMOVAL



TYPE 2400

Just as hardness or wetness of product presents a different handling problem at each quarry and crushing plant—it presents a different crushing condition. That's why American offers different types and capacities to FIT PARTICULAR JOBS rather than an "all-purpose" crusher.

For roadstone or agstone, Americans have the easy adjustability, too. Ask ay of the many who operate American.

Complete information sent at your request

American PULVERIZER COMPANY

Originators and Manufacturers of Ring Crushers and Pulverizers

1245 MACKLIND AVE.
ST. LOUIS 10, MO.

TRADE NOTES

G. J. Coffey

The appointment of Guy J. Coffey as vice - president in charge of sales of the Chicago Pneumatic Tool Company has been announced by W. Luther Lewis, executive vice-president. Mr. Coffey was made manager of the Los Angeles district office in 1939. He had joined the company in 1933 as a salesman in the Philadelphia branch and later was advanced to the Cleveland office.

Barber-Greene Company, Aurora, Illinois manufacturer of material handling equipment and bituminous mixing and paving machines, has expanded its area sales organization by the appointment of two additional area sales managers.

Capt. Earle F. Lamprey, until recently stationed at Camp Claiborne, Louisiana, Maintenance Division Headquarters, has been placed in charge of the New York area.

Ralph Dano, recently released by the War Production Board, where he was on leave from Barber-Greene as deputy director, Construction Machinery Division, now heads Barber-Greene sales activities in Canada. He will make his headquarters in Toronto.

The Hewitt Rubber Corporation has announced the purchase of a $200,000 plant, formerly the property of the Richardson & Boynton Company at Buffalo, New York. Acquisition of the buildings will provide additional space for the manufacture of Hewitt's new products and for expansion of the firm's line of industrial rubber items. President Thomas Robins, Jr., stated that approximately $150,000 will be spent to recondition the plant and an additional $350,000 for new machinery.

Nordberg Manufacturing Company announces the following changes in its New York office:

A. C. Colby, for many years connected with the Nordberg Manufacturing Company of Milwaukee, has resigned. He was with the Symons Brothers, of Symons cone-crusher fame, when their business was taken over by Nordberg and continued with the latter organization. Mr. Colby represented Nordberg as Eastern manager of the crusher division with offices in New York City, and covered New England, New York State, Pennsylvania, Maryland, Delaware and Virginia.

R. R. Shafter, who is vice-president and general manager of the Nordberg Process Machinery Division, has in addition been appointed Eastern manager of the Crusher Division. Headquarters for both divisions will remain at the same address, 60 E. 42nd Street.

Jack Bond has been transferred from the Washington office to New York and will cover the eastern territory as sales engineer for both Process Machinery and Crusher Divisions.

Gar Wood Industries, Inc., has retained Norman Bel Geddes, noted industrial designer, to restyle its entire varied line of products, it was announced today by Glen A. Bassett, president of the company.

This is believed to be the first time that modern industrial design will be applied to such products as bulldozers and dump trucks. Gar Wood also makes winches, cranes, tanks for carrying liquids and heating equipment.

At a stockholders' meeting of the Colorado Fuel & Iron Corporation at Denver on October 5 it was voted to accept the company's proposed merger with the Wickwire-Spencer Steel Company of New York. Wickwire-Spencer stockholders previously had approved the merger.

A. R. Tofte

Arthur R. Tofte has been named manager of the advertising and public relations department, Allis - Chalmers Manufacturing Company, of Milwaukee, Wisconsin. Mr. Tofte has been a member of the department since 1938.

He succeeds George J. Callos, who resigned to become vice-president and account executive for Klau-Van Pietersom-Dunlap Associates, Inc., of Milwaukee.

RYERSON STEEL IN STOCK

Call Ryerson when you need steel — any kind, shape, or size. Large stocks are available at eleven convenient plants. Ask for a Ryerson Stock List—your guide to quick shipment of steel.

Principal Products Include:

Bars • Plates • Sheets • Structurals
Inland 4-Way Floor Plate • Mechanical Tubing
Boiler Tubes • Hi-Bond Reinforcing Bars
Allegheny Stainless • Alloy Steels • Tool Steel • Babbitt Metal • Wire • Chain
Bolts • Rivets, Etc.

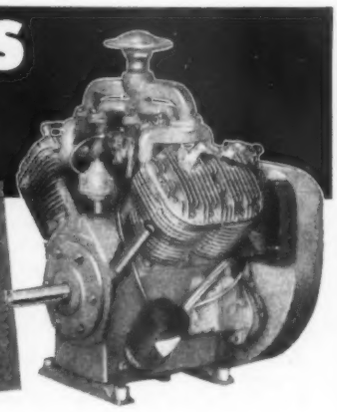
JOSEPH T. RYERSON & SON, Inc.

Steel-Service Plants at:

CHICAGO, MILWAUKEE, DETROIT, ST. LOUIS, PHILADELPHIA, CLEVELAND, PITTSBURGH, CINCINNATI, BUFFALO, NEW YORK, BOSTON

CYLINDERS are separate from CRANKCASE

ON ALL WISCONSIN 4-Cylinder V-Type Air-Cooled ENGINES



The cylinders on all V-type Wisconsin Air-Cooled Engines are cast in pairs, separate from the crankcase, for quick, economical servicing when required. In case a cylinder is accidentally scored beyond the possibility of reboring, it is only necessary to replace a relatively inexpensive pair of cylinders instead of an entire engine block. The picture shows the Model VE-4 Wisconsin Engine, with protective shrouding removed, illustrating method of attaching cylinders.

Most H.P. per pound

WISCONSIN MOTOR Corporation

MILWAUKEE 14, WISCONSIN, U. S. A.

World's Largest Builders of Heavy-Duty Air-Cooled Engines

The Spotlight

IS ON

THE

GILSON MECHANICAL

TESTING SCREEN

The compact, ingeniously designed GILSON TESTING SCREEN assures a controlled product guaranteed to meet specifications. Test samples of crushed stone, gravel, slag, etc. are carefully sized through five test screens by a smooth and quiet vibration, separating 100 pounds of sample in 5 minutes or less. Eliminate errors that happen through "sizing by guess"—write today for complete information on the GILSON TESTING SCREEN.

THE GILSON SCREEN CO.

P. O. BOX 186 MERCER, PA.

John K. Farrar

John K. Farrar 56, assistant secretary and advertising manager of the Jeffrey Manufacturing Company, died unexpectedly on October 11, in Columbus, Ohio. He had been associated with the company for 32 years.

Mr. Farrar was a past president, director and one of the founders of the Central Ohio Industrial Marketers.

Among the first of the post-war industrial expositions to be announced is the 20th Exposition of Chemical Industries, which is being organized for the week of February 25 to March 2, 1946, in Grand Central Palace, New York, lately utilized as an army induction center. The exposition will be commemorative of the first exhibit of its kind, which was organized during World War I.

Substantiating its successful backing is an advisory committee including the following: Raymond F. Bacon, consulting chemist; L. W. Bass, president, American Institute of Chemical Engineers; J. V. N. Dorr, president, the Dorr Compay; Sidney D. Kirkpatrick, editor, *Chemical and Metallurgical Engineering;* C. S. Marvel, president, American Chemical Society; Walter J. Murphy, editor, *Industrial and Engineering Chemistry;* Robert L. Taylor, editor, *Chemical Industries;* and R. Gordon Walker, vice-president, Oliver United Filters, Inc.

The Fuller Company, of Catasauqua, Pennsylvania, has announced the appointment of Colonel George Kemp Engelhart as vice-president in charge of sales. Except for the period of the war,

Col. G. K. Engelhart

Colonel Engelhart has been continuously associated with the Fuller interests since January, 1923. He began his service as patent lawyer, and was later placed in charge of research and development for the Fuller Company and its affiliates. In the latter capacity, he was closely associated with the marketing of new machinery and processes and novel applications of Fuller equipment. He was appointed assistant to the president of the Fuller Company in 1939, and maintained his close coordination with the Sales Department.

Shortly after the United States entered the War, Colonel Engelhart was ordered to active duty as a reserve officer, and in the fall of 1943 was appointed Director of the Internal Security Division, Provost Marshal General's Office. He was awarded the Legion of Merit for the development and administration of "policies governing internal security for the protection of war resources throughout the United States . . . thereby facilitating the discharge of the War Department's internal security responsibility." He was also awarded the Security Shield of Honor, and a citation, by the Commandant of the United States Coast Guard, "for valued and important contributions to the Port Security Program."

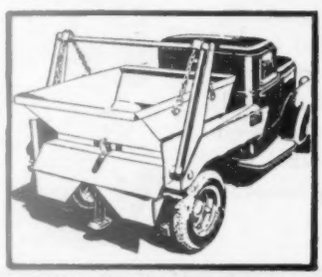
The name of the Athey Truss Wheel Company, Chicago, has been changed to the Athey Products Corporation. Its Forged-Trak wheels, MobiLoaders, force-feed loaders and rubber-tired trailers will hereafter bear the trade name, "Apcor." The change of name was made to conform with a new line of equipment which employs the new "Forged-Trak" style of wheel, successor to the former truss type design.

The executive offices of the Sullivan Machinery Company were recently moved from Michigan City, Indiana, to Pittsburgh, Pennsylvania.

Brooks

LOAD LUGGER

is "a natural" for handling materials, excavating, quarrying, road building, etc. One carrier (Load Lugger) with 5 to 10 detachable bodies (buckets) can transport more yardage per day than a fleet of ordinary trucks. Saves time, conserves manpower and reduces equipment costs. Note the simplicity of the Load Lugger . . . it mounts on any standard chassis . . . only 15 seconds for loading or dumping. Cut your costs the Load Lugger way!



Write for Catalog No. 44

111 Davenport Road, Knoxville 8, Tenn.

Distributors in all Principal Cities

Brooks EQUIPMENT AND MFG. CO.

Recent elections held by the directors of the American Hoist & Derrick Company of St. Paul resulted as follows: Frederic Crosby, chairman of the board; H. O. Washburn, president; R. E. Ljungkull, vice-president of engineering; D. B. Botkin, vice-president of manufacturing; S. M. Hunter, vice-president of sales; J. F. Bishop, secretary and assistant treasurer; R. J. Henry, assistant secretary.

Hewitt Rubber Corporation has announced that the P. J. O'Donnell Company, Inc., of Boston, has been appointed Boston distributor, to handle sales of industrial rubber products throughout Eastern Massachusetts.

H. C. Ramsey

Hobart C. Ramsey, executive vice-president of Worthington Pump and Machinery Corporation, has in addition, been named president of the Ransome Machinery Company, subsidiary of Worthington in Dunellen, New Jersey, where concrete mixers and road pavers are made.

Also named vice-president and general manager of the Dunellen plant is J. G. Ten Eyck, who has just completed five years' active service with the United States Navy and who was formerly president of the industrial engineering firm of Ten Eyck, Inc.

A new office was opened on August 1 by the St. Regis Paper Company, Bag Division, in the Book Building, Detroit, Michigan, with C. E. Anderson as manager.

Lima Locomotive Works, Inc., of Lima, Ohio, announces the appointments of six additional distributors for Lima shovels, draglines and cranes:

The Construction Equipment Corporation, Long Island City, New York; territory: southeastern New York, Long Island, Staten Island.

The Bill Goodwin Machinery Company, San Antonio, Texas. Territory: Extreme southern Texas.

The Reid-Holcomb Company, Indianapolis, Indiana. Territory: All of Indiana except a few counties in southeastern and northwestern Indiana.

The Southern Iron & Equipment Company, Atlanta, Georgia. Territory: Northwestern Georgia.

Morgan's, Inc., Savannah, Georgia.

R. J. Stone, 2457 Woodward Avenue, Detroit 1, Michigan.

Norman E. Palmer

The Cummins Engine Company, Inc., announces the reorganization of its sales department, creating two new sales divisions. Under the new plan, sales activities will be divided into two major fields, direct sales through dealers, and sales to manufacturers who power their equipment with Cummins Diesels, in order to provide more specialized sales and engineering service in each of these two fields.

Norman E. Palmer, the new general sales manager for the past three years, has been the Washington, D. C., representative for Cummins, and in that post was responsible for delivery of Cummins Diesel engines to the government and to equipment manufacturers fulfilling government contracts. Prior to becoming Washington representative, Mr. Palmer had been a member of the New York Regional Office sales staff.

J. D. Allen

Fred W. Sparks

J. D. Allen, becomes sales manager of dealer organizations, to supervise the activities of the Cummins dealers in the United States and Canada. He has been assistant sales manager for the last 18 months.

Fred W. Sparks, sales manager of manufacturing accounts, comes to his new job directly from the position of manager of the Cleveland Regional Office. Previously he was a sales engineer in the home office at Columbus, Indiana.

FLIGHT-VEYOR

TOPS THEM ALL!

Husky, well engineered, this portable conveyor is a versatile time-saver. Moves any bulk material quickly at low cost . . . ashes, cinders, grain, chemicals, metal parts, brick, aggregate, clay, coal . . . all sizes. Equipped with 1¾" drag-flights instead of a belt. Four sizes: 8 and 12 inch flights, 13 and 20 foot lengths. Raises material up to 9 feet with 13 foot model and up to 14 feet with the 12 foot size. For similar materials handling jobs where a belt is desirable, use CON-VAY-IT — built in the same four sizes.

Manufacturers of Coal-Veyor, Coal-Veyor, Jr., Con-Vay-It, Flight-Veyor.

AMERICAN CONVEYOR COMPANY
1117 W. Adams Street, Chicago 7, Illinois
Please send full information on

☐ Flight-Veyor ☐ Con-Vay-It

NAME .....

ADDRESS .....

CITY & STATE .....

LOW COST Eye Safety For Spectacle Wearers

Willson Cover-All* cup goggles give complete protection on eye-hazardous operations Roomy enough to fit over ordinary correction spectacles.

Direct ventilation prevents lens fogging. Eye cups are transparent for clear side perception. Accurately fitted to facial contours. Leather nose bridge adds extra security.

Designed to withstand impact hazards striking from any angle. Each Super-Tough* lens is given rigid, individual testing. Uniformly heat treated to assure maximum fracture resistance.

For help with your eye-protection problems, get in touch with your Willson distributor or write for further information.

*T. M. Reg. U. S. Pat. Off.

GOGGLES • RESPIRATORS • GAS MASKS • HELMETS

DOUBLE WILLSON PRODUCTS INCORPORATED
Established 1870

102 THORN STREET • READING, PA., U. S. A.

LUBRICATION SERVICE FOR MACHINERY USERS

The manufacturer of machinery using LUBRIPLATE for initial lubrication wants the machine operator to continue to use it for service lubrication. LUBRIPLATE is the best lubricant for the job. That is why it was used in the first place. To assure you of a convenient source of supply of LUBRIPLATE, the machine manufacturer put a tag with a postcard on the machine before he shipped it. Tear off the postcard, fill in your name and address and mail it to us. We will notify you of the name and address of the nearest LUBRIPLATE Dealer and see that he calls on you.

Rx FOR YOUR MACHINERY

No. 3—Ideal for general oil type lubrication. Ring oiled bearings, wick feeds, sight feeds and bottle oilers.

No. 8—Because of its high film strength and long life reflects outstanding performance in most types of enclosed gears (speed reducers).

No. 107—One of the most popular grease type products for general application by pressure gun or cups.

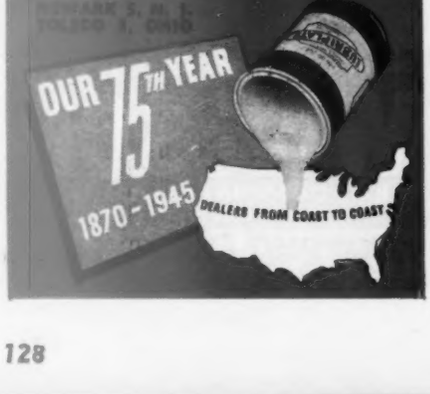
No. 70—For a wide range of grease applications, especially at temperatures above 200 degrees F.

No. 130-AA—Known nationwide as the superior lubricant for open gears, heavy duty bearings, wire rope, etc.

BALL BEARING—This is the LUBRIPLATE lubricant that has achieved wide acclaim for use in the general run of ball and roller bearings operating at speeds to 5000 RPM and temperatures up to 300 degrees F.

Write for a booklet, "The LUBRIPLATE Film written especially for your industry.

LUBRIPLATE



Controlling interest in the Kensington Steel Company of Chicago, manufacturers of Oro manganese and alloy steel castings, has been acquired by Poor & Company of Canton, Ohio. Kensington will continue under the same management, with the following officers: Eugene C. Bauer, president; Kenneth Jensen, vice-president; R. W. Sergeant, secretary-treasurer; E. C. Anderson, sales manager.

Two sons of Dwight D. Guilfoil, Sr., vice-president and general sales manager of Sauerman Brothers, Inc., of Chicago, appear in the accompanying illustration. Former Staff Sgt. Dwight, Jr., (left) an

Myers Newspapers and North Side Sunday Star

The Guilfoil brothers.

artist, who is partially paralyzed as a result of infantile paralysis and spinal meningitis contracted while serving with the Army Air Force, and Tech. Sgt. Jack (right) are looking at medals awarded posthumously to another brother, Staff Sgt. William. The Air Medal, the Distinguished Service Cross and the Purple Heart were won by William, who lost his life over Italy on October 5, 1943. Jack has just returned from a Japanese prison camp, where he was interned after the fall of Bataan in 1942.

L. W. Babcock, assistant director of operations of the Explosives Department, has been appointed director of personnel of Hercules Powder Company. Mr. Babcock has been assistant director of operations of Hercules Explosives Department since July, 1940.

Hewitt Rubber Corporation, Buffalo, New York, recently announced that Joseph H. Hayden has been promoted to the position of vice-president and William H. Watkins has been named controller and assistant treasurer.

Mr. Hayden is widely known in the rubber industry, having been associated with Hewitt for 27 years. He became secretary of the corporation in 1936.

Mr. Watkins this year will complete his twentieth year of service with Hewitt, having served as head of the Hewitt accounting department until his recent promotion.

R. B. Spang, who was formerly associated with the Besser Manufacturing Company of Alpena, Michigan, as service manager, has resigned from this position and is now assistant general manager of the Concrete Pipe Machinery Company of Sioux City, Iowa.

J. H. Heintz

J. H. Heintz, sales and construction engineer who has been prominently identified with the construction industry for the past 25 years, has been appointed general sales manager of the C. S. Johnson Company, manufacturers of construction machinery and equipment at Champaign, Illinois.

Before joining the C. S. Johnson Company, Mr. Heintz was engaged in airport construction in Florida and Central America from 1941 to 1944. Previously he had operated his own construction materials and steel jobbing business.

Georges Bia, Nordberg Manufacturing Company (Crusher Division) representative for more than 15 years in Belgium and in the Belgian Congo, has been heard from recently. At the time of the German invasion of Belgium, M. Bia escaped from Brussels a little before the Nazis' arrival. He made his way to the Belgian Congo, where he opened Nordberg headquarters in Leopoldville.

Jacques Bia, son of M. Bia, a civil engineer who served with Middle East forces during the war, has rejoined his father as a Nordberg agent.

Frank A. Kremser & Sons, Inc., have announced the moving of their yard and equipment from Reading, Pennsylvania, to Philadelphia on November 1.

TRIPLE CHECK PRODUCTION

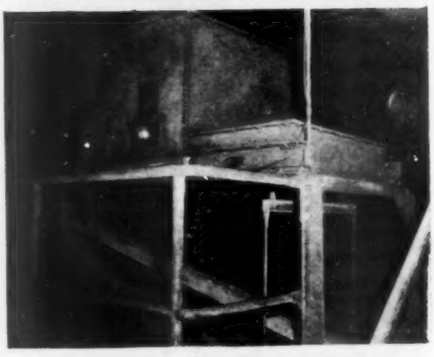
✓ Automatically . . . .

✓ Accurately . . . . .

✓ Economically . . . .

with the MERRICK

WEIGHTOMETER



This is the modern, time-proven method of continuous weighing and recording of raw materials handled by belt conveyors. For precision and economy, specify MERRICK Weightometers in your production line. Write for Catalog.

MERRICK SCALE MFG. CO.
Passaic, New Jersey

Isaac Fogg was elected president of Atlas Powder Company, succeeding Leland Lyon, who resigned as president and as member of the executive committee, but retained the post of chairman of the board of directors.

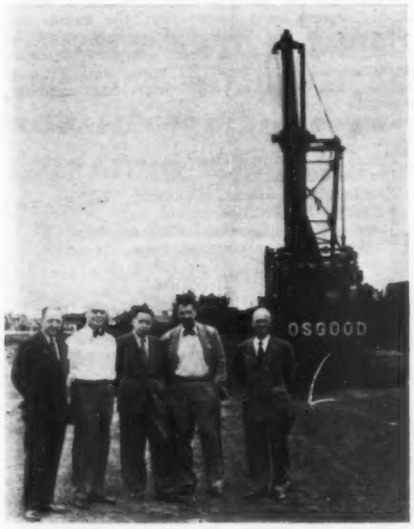
Isaac Fogg

F. S. Pollock

Mr. Fogg joined Atlas in 1913 as confidential secretary in the office of the secretary-treasurer. He was elected treasurer and member of the board in 1927 and vice-president in 1931.

F. S. Pollock, general manager of the Explosives Department, was elected vice-president. Mr. Pollock became director of the government Ordnance Works Department in 1942 and general manager of the Explosives Department later in that year.

Appointment of Udo Reidel as distributor in Brazil, S.A., has been announced by the Osgood Company and the General Excavator Company, both of Marion, Ohio. The new distributor maintains



Left to right: E. J. VanKeuren, assistant to the president; M. C. McNeil, president of Osgood & General Excavator; Udo Reidel; Don Smith, General Excavator sales manager; George Day, Osgood sales manager.

two sales offices, one in Rio de Janeiro and the second in Sao Paulo. The accompanying illustration shows in the background the new Osgood Type 100, equipped with long boom for stripper work.

The general offices and the repair service and rental departments of the Atlas Equipment Corporation of Pittsburgh, Pennsylvania, recently moved to new quarters at 635 Ridge Avenue.

C. R. Atherton has been appointed chief engineer with L.I.M.E. (Lime Industry Management and Engineering) of Hershey, Pennsylvania. Before serving in the United States Navy as a lieutenant commander, Mr. Atherton had been professor of mathematics and engineering at Hershey Junior College. During the latter part of his Navy service, he was executive officer of the Naval Diesel Training School at Raleigh, North Carolina.

Lt. Cmdr. Atherton

A new Westinghouse subsidiary recently announced is the B. F. Sturtevant Company of Boston, which has become a division of the Westinghouse Electric Corporation. Although under Westinghouse management, the new subsidiary, engaged in making air handling and processing equipment, will operate under its own name.

The Cleveland Crane & Engineering Company, Wickliffe, Ohio, announces a new heavy-machine division with headquarters in Wickliffe. Charles H. Saiter has been appointed sales manager in charge of the division, which will handle sales of heavy Cleveland overhead traveling cranes and Steelweld bending presses, bulldozers and special machinery.

PERFORATED METAL SCREENS
FOR SAND, GRAVEL STONE, ETC.
Manufactured exactly to your specifications.
Any size or style screen, in thickness of steel wanted with any size perforation desired.
We can promptly duplicate your present screens at lowest prices.
Prompt shipment
CHICAGO PERFORATING CO.
2435 W. 24TH PLACE CHICAGO, ILL.
Telephone CANAL 1439

NOT One FAILURE
in a million!
... that's a pretty good record but it is the one established by our chrome-nickel alloy ROPE SOCKETS
★
Yes, we have been making them for 36 years without a single recorded failure.
★
Take a lesson from experience, and specify ... EVANSTEEL Rope Sockets. They are stronger, lighter, and cost less.
Write for EVANSTEEL Bulletin
CHICAGO STEEL FOUNDRY COMPANY
KEDZIE AVE & 37TH ST.
CHICAGO 32, ILL.
Makers of Alloy Steel for 30 Years
PYRASTEEL for high temperatures
EVANSTEEL for strength

FARREL BACON CRUSHERS

Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants. Engineering Service.

FARREL-BACON
ANSONIA, CONNECTICUT

IT COSTS NO MORE — TO USE THE BEST

REPLACE WITH
"Indian Brand"

Shovel Dippers
Dipper Teeth
Shovel Treads

Crusher Jaw Plates
Mantles—Concaves
Bowl Liners
Roll Shells

Pulverizer Hammers
Grate Bars—Breaker Plates

Ball Mill Liners
Screen Plates

The Frog, Switch & Mfg. Co. CARLISLE, PA.

ESTABLISHED 1881

Trade Literature

The pieces of literature listed below can be obtained direct from the manufacturers named, or requests can be addressed to Pit and Quarry's "Service to Readers" Department.

PUMP ENGINEERING DATA (1945). 416 pages. Deals with such topics as principles of pump engineering, double suction-single stage horizontal split case pumps, small vertical split multi-stage pumps, clear liquid s.c.v. pumps, sump pumps and ejectors, non-clogging horizontal and vertical open shaft pumps, axial flow pumps, caisson pumps, pump accessories, etc. Illustrations, graphs, tables included. Economy Pumps, Inc., Hamilton, Ohio.

PROCEDURE SHEET ON BRONZOCHROM 185. A Eutectic low-temperature welding alloy for frictional, wear-resisting overlay on cast-iron, steel, malleable, bronze, copper and nickel alloys. Eutectic Welding Alloys, Inc., New York 13, New York.

PROCEDURE SHEET ON EUTECHROMS 11 AND 12. For extremely hard overlay on steel and ferrous metals. Eutectic Welding Alloys, Inc., New York 13, New York.

THE CATERPILLAR DIESEL D6 TRACTOR. 32 pages. Form 9106. Caterpillar Tractor Company, Peoria, Illinois.

USEFUL DATA FOR DETERMINING STRESSES, TORQUES, BENDING MOMENTS AND DEFLECTIONS IN STEEL SHAFTS. 16 pages. Bulletin WG-545. De Laval Steam Turbine Company, Worm Gear Division, Trenton 2, New Jersey.

INDUSTRIAL LOGISTICS. 12 pages. Form A-9516. A survey for management, covering machining, finishing, assembling, load transportation, testing, packing and warehousing. The Elwell-Parker Electric Company, Cleveland 15, Ohio.

TODAY IT'S TRACKS AND RUBBER. 12 pages. Form 8995. Caterpillar Tractor Company, Peoria, Illinois.

IDECO STEEL BUILDINGS. 16 pages. International Derrick & Equipment Division, International-Stacey Corporation, Columbus, Ohio.

FOR LOW-COST ELECTRIC POWER. 12 pages. Form 9091. Caterpillar Tractor Company, Peoria, Illinois.

BALL BEARING PRACTICES FOR THE SHOP MAN. Bulletins 1 to 27. A series of 4- to 12-page bulletins dealing with the practical phases of the manufacture of ball bearings, such as handling, assembling, grinding, housing, seals, mountings, lubrication, etc. Profusely illustrated with photographs, sketches, diagrams, graphs, tables. The series is packed in a convenient manila portfolio. The Marlin - Rockwell Corporation, Jamestown, New York.

POLLUTION REMOVAL AND BY-PRODUCT RECOVERY EQUIPMENT. 4 pages. Hardinge Company, Inc., York, Pennsylvania.

LABOUR TYPE G PUMPS. 13 pages. Bulletin number 51. The La Bour Company, Inc., Elkhart, Indiana.

DIRT MOVING AT LOWEST NET COST PER YARD. 11 pages. R. G. LeTourneau, Inc., Peoria, Illinois.

WHERE DO WE GO FROM HERE? 16 pages. Number E6085-A. Describes "complete engineering training course" inaugurated by Allis-Chalmers. Allis-Chalmers Manufacturing Company, 575, Milwaukee, Wisconsin.

IN MINE, PIT AND QUARRY WITH CATERPILLAR. 8 pages. Caterpillar Tractor Company, Peoria, Illinois.

NEW MAXSPEED HOIST DRIVE. 11 pages. General Electric, Schenectady, New York.

HALL-SCOTT INDUSTRIAL ENGINES, Series 400. 21 pages. Hall-Scott Motor Car Company, Berkeley, California.

STATEMENT OF OWNERSHIP

Statement of the ownership, management, circulation, etc., required by the Acts of Congress of August 24, 1912, and March 3, 1933, of PIT AND QUARRY, published monthly at Chicago, Illinois, for October 1, 1945.

State of Illinois, County of Cook, *ss.*

Before me, a notary public in and for the state and county aforesaid, personally appeared H. W. Baumgartner, who, having been duly sworn according to law, deposes and says that he is the business manager of PIT AND QUARRY, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the act of August 24, 1912, as amended by the act of March 3, 1933, embodied in Section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Complete Service Publishing Company, Chicago, Ill.; Editor Walter E. Trauffer, same; Managing Editor, Stanley A. Phillips, same; Business Manager, H. W. Baumgartner, same.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent. or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given).

Complete Service Publishing Company, Chicago, Ill.
Harry W. Baumgartner, same.
Ida A. Baumgartner, same.
Stanley A. Phillips, Evanston, Ill.
Florence S. Phillips, same.
James E. Montgomery, Chicago, Ill.
Evelyn W. Montgomery, same.
Lanetta B. Smith, Glen Ellyn, Ill.
W. T. Klussman, Brookfield, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent. or more of the total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is ..... (This information is required from daily publications only.)

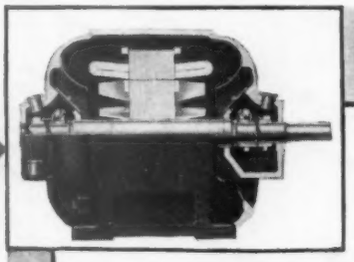
H. W. BAUMGARTNER,
Business Manager.

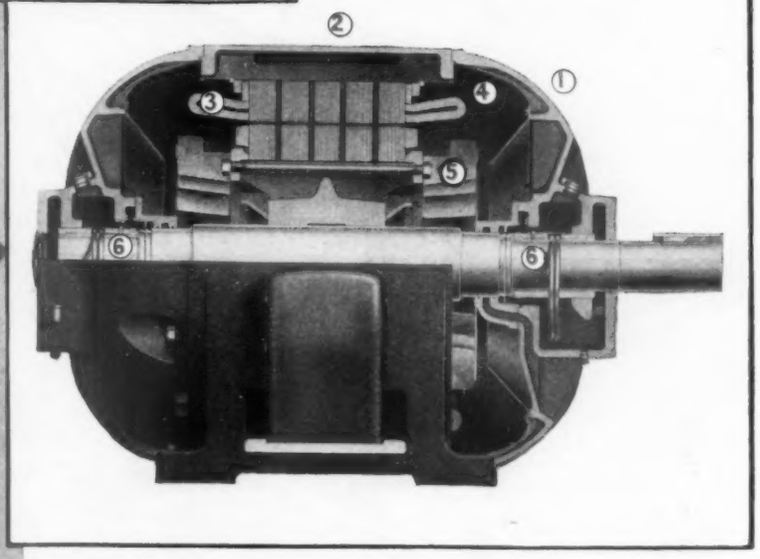
Sworn to and subscribed before me this 25th day of September, 1945.
(SEAL) RAYMOND S. SCHULTZ,
(My commission expires January 21, 1947.)

SAME STRONG POINTS OF CONSTRUCTION

from 1 hp

to 2000 hp





Now all your drives — large and small — can have standard G-E Tri-Clad induction motors with the famous protective features that guard against PHYSICAL DAMAGE, ELECTRICAL BREAKDOWN, OPERATING WEAR AND TEAR.

Tri-Clad, in its wide range of types and sizes (recently increased to 2000 hp), is G.E.'s most widely used (integral-hp) motor. For complete details on ratings, characteristics, and dimensions, write for Bulletin GEA-3580. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

HERE'S TODAY'S WIDER RANGE OF STANDARD SIZES	
Tri-Clad Type K (Low starting current, normal starting torque)	1 hp to 2000 hp at 1800 rpm
Tri-Clad Type KG (High starting torque, low starting current)	5 hp to 200 hp at 1800 rpm
Tri-Clad Type KR (High starting torque, high slip)	Available to 100 hp in speeds required for high-slip flywheel drive (punch press, etc.)

① Cast-iron frame and rigid, cast-iron end shields protect the motor from external blows and accidental abuse.

② Completely enclosed upper portion of frame guards against entry of falling objects and dripping liquids; keeps chips and the like from vital motor parts.

③ Windings of Formex* wire—one of the toughest magnet wires yet developed—resist heat aging, heat shock, and abrasion.

④ End windings are coated with Glyptal* varnish, providing a tough, hard finish that withstands moisture, oil, and abrasion.

⑤ Low-velocity, double-end ventilating system keeps the motor running cool and prolongs insulation life. One-piece, cast-aluminum rotor (used on all but the largest sizes), with integrally cast fans, is practically indestructible.

⑥ Bearings have extra capacity to take heavy shaft loadings from any direction. Lubrication is convenient, its effectiveness well proved.

*Trade-mark reg. U. S. Pat. Off.

TRI CLAD MOTORS

Buy all the BONDS you can — *and keep all you buy*

750-266-8030

GENERAL ELECTRIC

205 CRUISER FACTS:

Independent Travel, Swing, Hoist, Boom Action: How much work could you do if you had to stop moving your arms every time you moved your legs?

Hydraulic Steering: Synchronized with high travel speed for easy maneuverability.

Air Operated Hydraulic Brakes: To make fast moves SAFE.

Tandem Drive Wheels: 4 Drive wheels, to pull you out of trouble.

One MAN

Travels 8 Times Faster

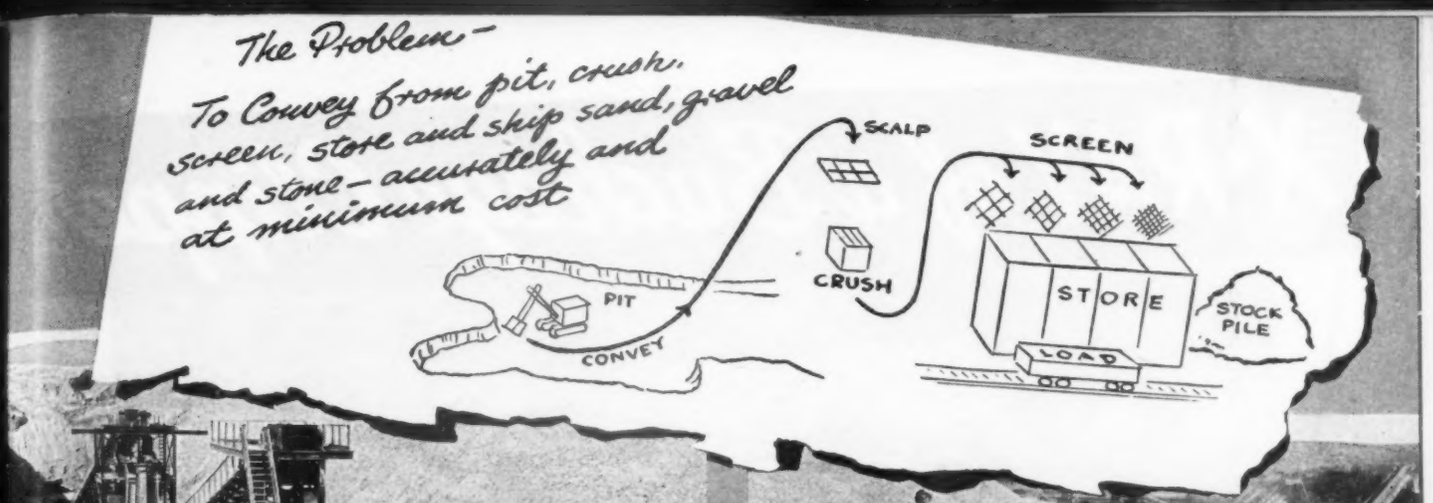
Lifts 14,500 lbs. All-Around

At its new top job-to-job speed of 8 M.P.H., the one-man operated Koehring 205 Cruiser Crane travels approximately 8 times faster than a crawler crane. With a 30-ft. boom, at a 12-ft. radius, *without* outriggers, it lifts 14,500 lbs. not only over the end, but over the side and all-around. (Not a tipping load, but a conservative manufacturer's 85% rating!)

KOEHRING COMPANY • *Milwaukee 10, Wisconsin*

KOEHRING HEAVY DUTY

HEAVY-DUTY CONSTRUCTION EQUIPMENT



Belt conveyer from final screening to storage

Scalping and crushing station

SO THE MOUNTAIN CAME TO MAHOMET

Belt conveyer to and from screening

One of the large crushed-gravel ballast producing plants turned this Mountain and Mahomet problem over to S-A engineers and the mountain is now moving into the maws of commerce at the rate of 700 tons per hour.

Miraculous? No, just an ordinary run-of-mine engineering job for Stephen-Adamson who have been solving conveyor problems such as this for more than 42 years.

Whether your problem calls for specially designed equipment or can be solved with an assembly of standard and auxiliary S-A units, you can depend upon getting the utmost in efficiency to meet your particular requirements.

Consult Stephens-Adamson on present and future material and handling problems.

STEPHEN S-A ADAMSON MFG. CO.

7 RIDGEWAY AVENUE, AURORA, ILLINOIS — LOS ANGELES, CALIF. ★ BELLEVILLE, ONT.

Designers and Manufacturers of All Types of

BULK MATERIAL HANDLING EQUIPMENT

X-RAY of a Buckeye Clipper

Here you can see the reasons for the smooth, cost-cutting performance of Buckeye Clipper Shovels.

Note the efficient, balanced distribution of operating units on machinery deck—simplified, easy-to-use controls—large drums, clutches and brakes—automotive type (chainless) drive—sturdy, independent chain crowd.

Circled is the vacuum pump, heart of the "Mevac"—metered vacuum control system. This system—similar to those used for years on highway trucks and trailers—provides fast, positive, responsive operation of clutches and brakes that control all the shovel's functions—travel, hoist, crowd, swing, dipper trip—at a flick of the operator's wrist.

Send for your copy of "Age of the Clippers" and learn how these rugged, easy-to-operate shovels can help you cut costs on today's competitive jobs.

Quickly convertible from Shovel to Trench Hoe or Dragline.

Built by **Buckeye**

Buckeye Traction Ditcher Co., Findlay, Ohio

Convertible Shovels | Trenchers | Tractor Equipment | Road Wideners | R-B Finegraders | Spreaders

Hard users of light trucks... READ THIS TWICE!

PHONE 167

W. J. SPARKS, JR.
TRUCKING CONTRACTOR
SAND AND GRAVEL
VICTORIA, TEXAS

P. O. BOX NO. 69

May 12, 1945

Mack-International Motor Truck Corporation,
3005 Harrisburg Boulevard,
Houston, Texas.

Attention: Mr. R. W. Allen, Manager

Dear Sir:-

You undoubtedly recall that in 1941 about this time you made your first call at my office.

I was at that time using equipment of various makes in the 1½ ton size. I had used these light trucks for hauling gravel and for various types of dump work for several years, and it was hard to convince me that a heavier truck could save me money and increase the efficiency of my fleet.

However, I bought one truck equipped as you recommended. Before the year ended I owned a total of thirteen Mack EFX dumpers and had more on order.

During the war these trucks have given such a good account of themselves that I wonder now why I waited so long to buy them. All of these trucks travelled in excess of 150,000 miles before engines were overhauled. They now have over 250,000 miles on them and transmissions and rear axles have not been over-hauled.

The ability of these trucks to work hard and stay on the job has been the cause of me being asked to bid on many contract jobs which I could not have handled with ordinary trucks.

Yours very truly,

W. J. SPARKS, JR.

By _____
Office Manager

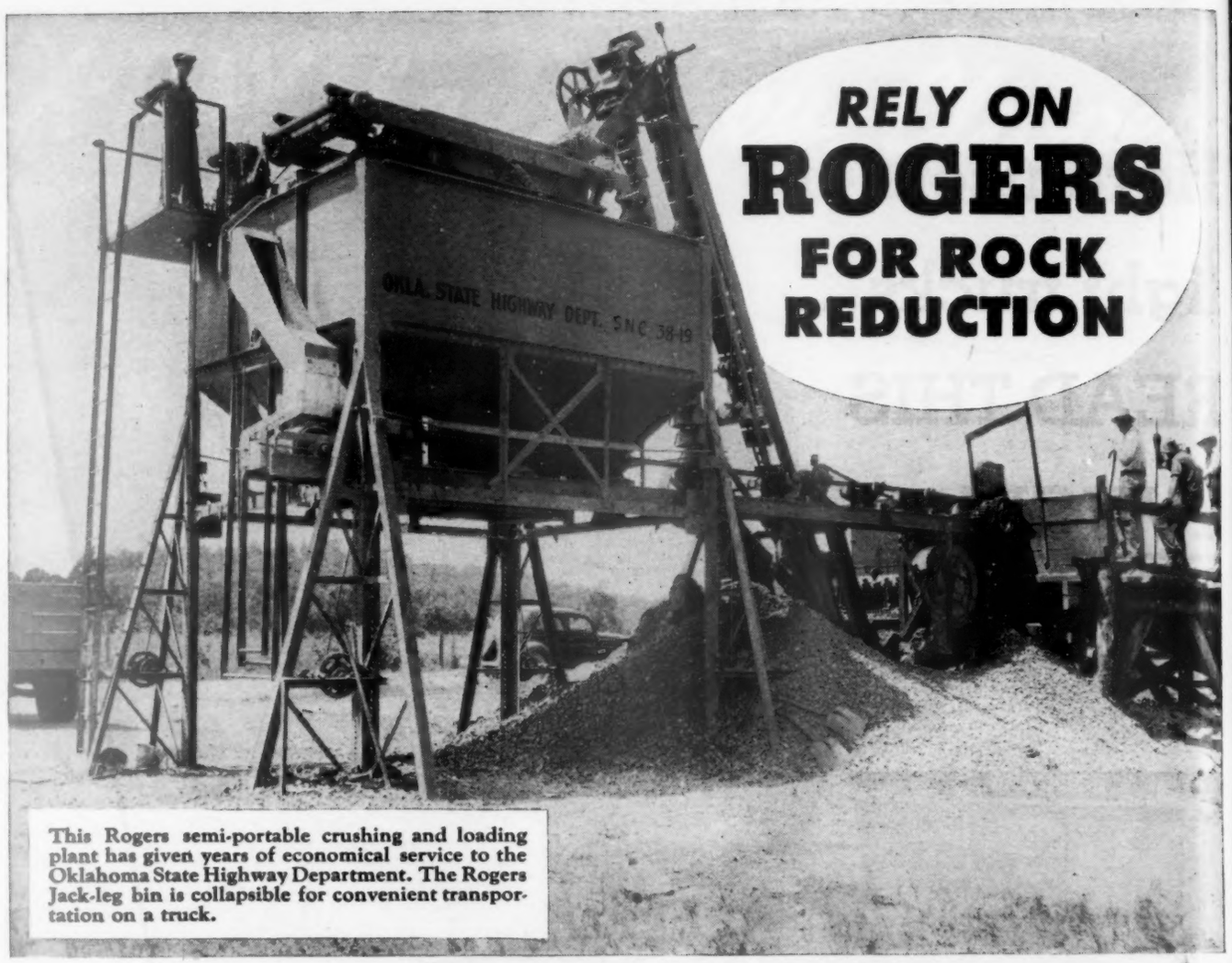
AJT/eh

★ BUY THAT VICTORY BOND TODAY ★

Mack Trucks, Inc., Empire State Building, New York, N. Y. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities.

Mack
TRUCKS
FOR EVERY PURPOSE
ONE TON TO FORTY-FIVE TONS

Performance Counts

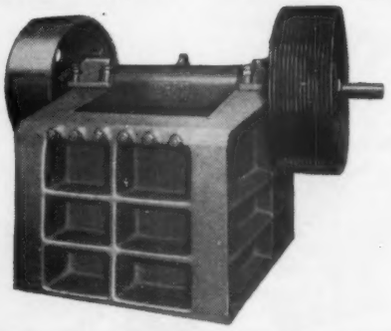


RELY ON ROGERS FOR ROCK REDUCTION

This Rogers semi-portable crushing and loading plant has given years of economical service to the Oklahoma State Highway Department. The Rogers Jack-leg bin is collapsible for convenient transportation on a truck.

EQUIPMENT FOR CRUSHING...SIZING...CONVEYING...STORING

Rogers offers a complete line of rock reduction equipment – every piece built to the highest standards of performance, strength and reliability. When you "Rely on Rogers" for your equipment, you can be certain that no part of your operations will be handicapped by the failure of one link in the process. The extra strength and extra capacity built into every Rogers crusher mean greater production at a lower operating and maintenance cost.



Rogers jaw crushers available in 16 sizes are so sturdily built that, despite greater capacity, there has never been a shaft or bearing failure reported in a Rogers.

ROGERS IRON WORKS CO.

JOPLIN, MISSOURI

Quarry Plants • Gravel Plants • Jaw Crushers • Roll Crushers • Belt Conveyors • Bucket Elevators • Screens • Feeders • Steel Bins

November, 1945

The CONCRETE MANUFACTURER

A Special Section of...

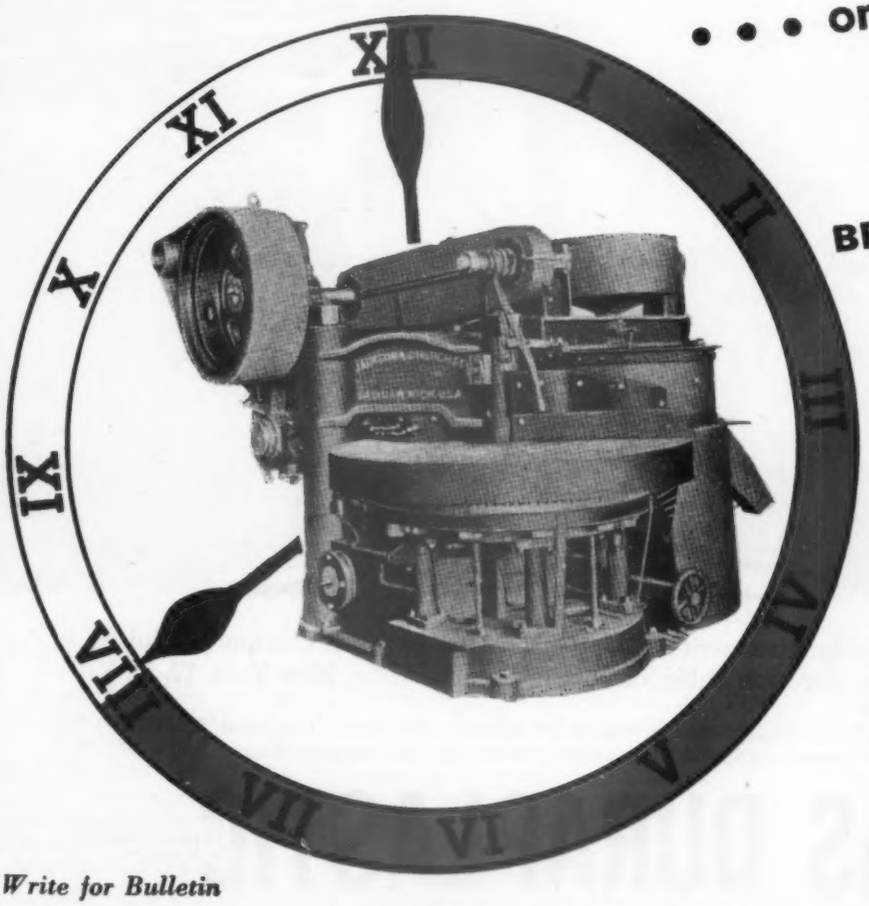
Fast CONCRETE BRICK PRODUCTION

28,000 per 8-hour shift

• • • on the new

J&C

BRICK MACHINE



"Watch the BRICKS go by" — 3500 of 'em every hour—at any modern plant where this J&C unit is doing its stuff.

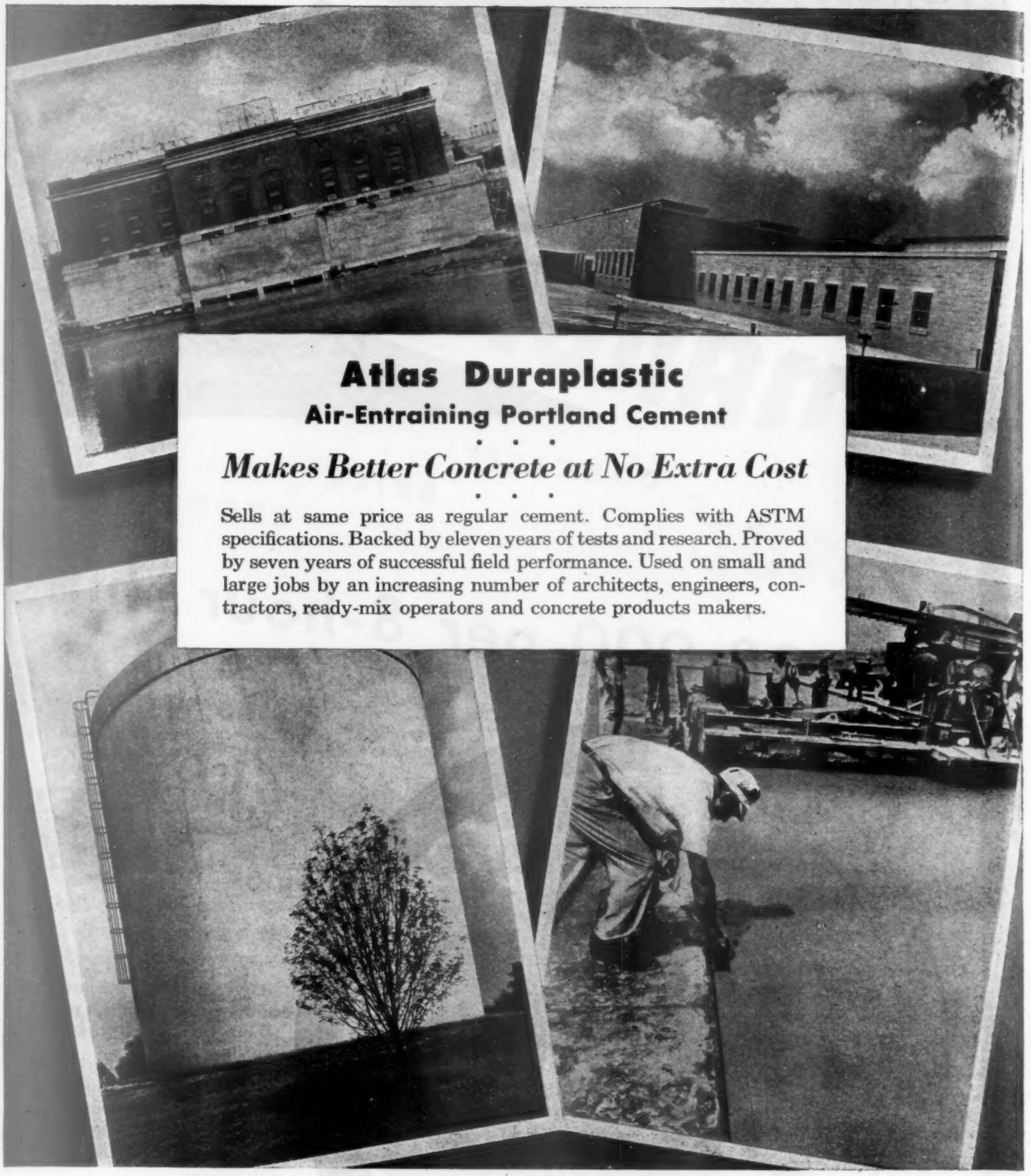
Examine any brick at random — you will find it sharp-edged, even textured, and perfectly uniform throughout.

The new J&C Brick Machine uses no pallets, effecting a great saving in storing, handling and maintaining these items.

NOW'S THE TIME to install a J&C for large-scale, low-unit-cost, post-war production.

Write for Bulletin

JACKSON & CHURCH CO., SAGINAW, MICHIGAN



Atlas Duraplastic

Air-Entraining Portland Cement

• • •

Makes Better Concrete at No Extra Cost

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Sells at same price as regular cement. Complies with ASTM specifications. Backed by eleven years of tests and research. Proved by seven years of successful field performance. Used on small and large jobs by an increasing number of architects, engineers, contractors, ready-mix operators and concrete products makers.

For detailed information write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

OFFICES: New York, Chicago, Albany, Boston, Philadelphia, Pittsburgh, Cleveland, St. Louis, Minneapolis, Duluth, Kansas City, Des Moines, Birmingham, Waco

ATLAS DURAPLASTIC

TRADE MARK REG. U. A. C. CO.

AIR-ENTRAINING PORTLAND CEMENT

Makes Concrete More Durable and More Plastic

PQ-D-12

The CONCRETE MANUFACTURER

NOVEMBER, 1945

Vol. 9 No. 5

A MAGAZINE DEVOTED TO PRODUCTION OF CONCRETE PRODUCTS AND READY - MIXED CONCRETE

CCA

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J. A. CONVERSE

Lt. Col. Scripture Resumes Vital Work At Master Builders

Lieutenant Colonel E. W. Scripture, recently returned from Europe after serving three years with the U.S. Army Engineers, resumed his post on October 8 as director of research of the Master Builders Company, Cleveland, Ohio.

Lt. Col. E. W. Scripture

Colonel Scripture entered the service in 1942 as a captain, and was assigned to the Office of the Chief Engineer, European Theater of Operations. The first two years of his service overseas were in England, where he took part in planning the invasion. In August, 1944, he went to France, where he continued planning for engineering operations on the Continent. He was awarded the Purple Heart, Bronze Star Medal, and the Legion of Merit.

Colonel Scripture, who is also a veteran of World War I, is widely known in the construction industry for his research work in the improvement of concrete and mortars.

D. T. Papineau Elected Head of Publishing Firm

Donald T. Papineau, who formerly was business manager of *Concrete* and also of *Marine Equipment*, has been elected president of the Concrete Publishing Corporation. Mr. Papineau came to Concrete Publishing Corporation in 1940 from the Celotex Corporation, where he had been assistant manager of the Pottsco department, now the Celocrete Division. In his new position, he will be responsible for the direction of both *Concrete* and *Marine Equipment*.

Develops Compact Guide For Estimating Concrete

Herbert Rusk, vice-president and general manager of Ready Mixed Concrete, Inc., Mansfield, Ohio, has developed a compact and practical concrete estimating guide, in folder form, which is useful to both producers and users of concrete. This guide gives the cubic yard content of concrete in slabs of from 10 to 1,000 square feet and from 1 to 16 inches thick. Mr. Rusk says he will be happy to send copies of this guide to any producer asking for it and enclosing a stamped, self-addressed envelope.

Illinois Concern Begins Building $60,000 Plant

Work has begun on the $60,000 modern concrete block plant of the Chillicothe Gravel Company at Chillicothe, Illinois. Operation is expected to begin by March 1, 1946. Meanwhile, the present plant will continue production. The new building and equipment will increase the output from 1,000 units (current average) to about 8,000 daily.

Coming Events

January 27-31, 1946 — Chicago. Annual meeting. Associated Equipment Distributors, Edgewater Beach Hotel.

March 12-14, 1946 — Chicago. Annual conference. National Concrete Masonry Association, Sherman Hotel.

Operations Resumed New Plant Opened By Spokane Concern

The Washington Culvert and Pipe Company of Spokane, Washington, a subsidiary of the American Rolling Mill Company of Middleton, Ohio, resumed operations on October 1, according to a report from Eugene W. Gibson, general manager. Mr. Gibson also announced the opening of a branch plant at Moses Lake, Washington, estimated to cost $15,000, where concrete pipe will be manufactured and made available for use in the development of the Columbia basin irrigation project. Charles Heinrich will be the new superintendent of production operations.

Expanded Output Planned By Idaho Products Firm

The Jerome Cinder Products Company plant at Jerome, Idaho, owned and operated by R. J. Milner, R. O. Camozzi and Caroll Whylie, which is undergoing a major expansion program, has installed two drying ovens with a capacity of 35,000 blocks under steam drying at one time. A brick-making unit capable of producing about 100 bricks per minute also has been added. The manufacture of concrete pipe and headgates and other products will be expedited by the addition of a 140-foot conveyor for sand and gravel at the top of the storage bins.

The volcanic material utilized in the firm's products is supplied by a company-owned deposit 180 miles from the plant. It is one of only three such deposits known to exist in the United States.

Longacher Appointed To New Neff & Fry Post

Lee Longacher has been named sales manager of the Industrial Bin Division of the Neff & Fry Company, Camden, Ohio. Mr. Longacher had previously occupied other positions in the firm, which manufactures concrete stave silos and all types of commercial bins.

Concrete Masonry Assn. Plans March Meeting

The conference on plant design, sponsored by the National Concrete Masonry Association, drew a good attendance in Chicago on September 21 and 22. Members and associate members gave first-hand, practical information on plant plans and the use of their equipment. The same type of program is planned for the next meeting in March.

Concrete Incinerator Popular in California

A familiar sight in the back yards of most southern California homes is a concrete incinerator like the unit shown in the accompanying illustration. The incinerators are built almost entirely of precast concrete slabs. It is estimated that more than 200,000 are already in service in the Los Angeles area alone. The backyard incinerator is a necessity in that area for the disposition of combustible rubbish which is usually consigned to the furnace or basement boiler in colder climates. Production of these units is a profitable sideline for concrete-products plants in California, the complete units selling for $18 and upward, depending upon the size. The unit shown in the illustration was built by R. W. Lefler & Company of Alhambra.

Precast concrete incinerator.

The Graystone Concrete Products Company of Seattle, Washington, has completed installation of a new 100-horsepower boiler in its new two-story concrete masonry boiler house. The firm also has built additional curing rooms.

New $50,000 Plant In Washington to Make Pumice, Concrete Block

East Wenatchee, Washington, is the site of a new industry, the Mortarless Masonry Company of Washington, which is building a $50,000 plant for the production of a newly-patented type of pumice and concrete building blocks. According to E. E. Darnell, manager, production is expected to begin by January 1.

Hultmark Heads Section On Concrete Products

The remaining tasks of the War Production Board, dissolved on November 3, will be transferred to the Civil Production Agency in the Office for Emergency Management. Myron Hultmark will transfer to that agency to continue his work as director of the concrete products section.

New Saticoy Venture Headed by Stovall

The Saticoy Rock Company has gone into the ready-mixed concrete business, with batching plants located at Ventura and Saticoy, California. In charge of the new division is Arno Stovall, who formerly was engaged in a supervisory capacity in the Orange County area for the parent company, Consolidated Rock Products Company of Los Angeles.

W. L. McDaniel Named Massey Vice President

W. Lyle McDaniel was recently elected vice-president of the Massey Concrete Products Company of Chicago, succeeding W. H. Robertson, who had resigned. Mr. McDaniel previously had been chief engineer in charge of plant operations. Ross Clarke was appointed resident manager at Chicago.

Merchant Marine Veterans Operate Block Business

Frank Colton and Darrel Stone, former members of the United States merchant marine, have opened a plant in Colorado Springs, Colorado, for the manufacture of cinder and cement building blocks.

Tile Makers Break Production Impasse By Assuming Lease of Block Firm

Left: Setting roof tile, made by the Brady Roofing Tile Manufacturing Company, Inc., of Miami, Florida. Note continuous tie-beam around top of wall—good construction in hurricane area. Right: A completed home, showing attractive effect gained with bell roofing tile.

another ON THE SPOT report

L. W. NELSEN, well-known Illinois products manufacturer, and his daughter, Miss A. L. Nelsen, are co-partners in the Brady Roofing Tile Manufacturing Company, Inc., at Miami, Florida. For many months their plant, which produces bell and interlocking-shingle tile, has been working at top capacity to supply the numerous war-time housing projects in Miami and vicinity, and particularly Mr. Nelsen's own building activities carried on under the name Nelsen Construction Company.

The Nelsens began making roofing tile in Miami back in 1937 to provide an outlet for their creative energies in the somewhat-more-passably mild climate of the Florida peninsula. The plant reached a productive rate of 5,000 tiles per month before the war clamped a tight lid on home-building activities. With his flourishing firm at Champaign, Illinois, the Nelsen Concrete Culvert Company, under capable management, and the tile business temporarily flat on its back, Mr. Nelsen rebelled at the notion of sitting the war

By WILLIAM M. AVERY

out comfortably under the palm trees. The Nelsen Construction Company which he soon organized has handled upwards of $5,000,000 worth of government contracts, including the huge Thirty-Sixth Street Airport at Miami.

When housing projects re-entered the picture, concrete masonry production became one of the most pressing bottlenecks to overcome in the Miami area. The price freeze in 1942 had caught block manufacturers with the lowest prices existing anywhere in the country, and by 1944 many of the smaller plants had been compelled to stop block production altogether or go bankrupt. Although it was virtually impossible for the owners of such plants to produce blocks and sell them at a profit to contractors, Mr. Nelsen seized upon the one loophole that might break the deadlock to the satisfaction of all parties. He took over on lease the block-producing facilities of the O'Neil Block & Septic Tank Company, Miami, for the sole purpose of making sufficient concrete masonry units to take care of his own construction activities. With both the price issue and the problem of wage rates thus solved at one stroke, production was resumed at the plant and Mr. Nelsen's housing commitments went ahead on schedule.

The operation of the block plant has been under the supervision of the H. C. Nutting Laboratories, and

Block machine in the plant leased by the Nelsens to produce their own masonry units.

Mr. L. W. Nelsen and his daughter, Miss A. L. Nelsen, owners of the Brady Roofing Tile Manufacturing Company, Inc.

Leveling off a flat tile on one of the hand machines which supplement the block machine.

Dusting Portland cement on a newly-formed bell tile, which later will be given a glossy finish.

units have been meeting specifications, in from 4 to 6 days. One Stearns No. 7 Joltcrete has been in operation, producing 4,000 to 4,500 blocks per day with a 6-man crew working single shift. A Barett Cravens PowerOx lift truck has recently been purchased to speed up the handling of loaded racks. The O'Neil company has continued manufacturing and servicing septic tanks under its own name.

About half the floor space in the roofing tile plant operated by the Nelsens is at present devoted to millwork on houses under construction—

Power lift truck speeds up handling of loaded racks.

even including the making of windows and doors—but the intention is to convert the entire plant to tile production as soon as possible. This would appear to be a sound premise, for the demand for roofing tile in and about Miami is tremendous. In addition to their definite insulating value, well-made roofing tiles lend a pleasing character to the small, one-story houses which predominate in this semi-tropical locality.

According to the Nelsens, the primary secret of producing top-quality tiles which will stick permanently to roofs when applied and will weather without discoloration, is maintaining the product continuously in protected storage up to the time it is required on the job.

Ex-Supermen Play New Role In P.O.W. Jobs at Kissam-- Aid Vital War Production

another ON THE SPOT report

KISSAM Builders Supply Company, a concrete products manufacturer located at Orlando, Florida, has made extensive use of German prisoners since December, 1944, in order to maintain adequate production for such important war installations as the Banana River Naval Air Base and the Orlando Air Base. The army supplies one guard with a crew of 12 men, and while the arrangement is far from ideal from the company's point of view, it has, on the whole, worked far better than seemed possible at the outset.

Allen Kissam, owner and operator of the plant, reports that he has had surprisingly little trouble in obtaining a day's work from these somewhat deflated German "supermen," although on the other hand their performance generally fails to substantiate the Nazi doctrine of race superiority. They seldom grumble about the work they are required to do, and quickly develop systematic work habits and efficient organization. Some even display an obvious pride in doing the job well.

The company sends one of its trucks to pick up the crew at Orlando air base each morning and transports them to the block plant. The crew usually includes one man who can speak a little English—i.e., who can grunt a little more intelligently than the others. With his assistance and a liberal use of sign language, the language barrier is hurdled with surprisingly little difficulty, and so far no swastika-concrete units have appeared to upset the decorum of the plant.

The prisoners are employed only as common laborers, on such jobs as mining and stacking, while the firm's regular employees operate the 6 vibrating-core block machines.[1] Their services are paid for by the company at the standard rates for regular employees doing comparable work, but the Government pays them only 80 cents a day. Although this looks like good business for Uncle Sam, he manages in this, as in all of his transactions, to wind up with a tidy loss and no impairment of his amateur standing.

Mr. Kissam reports that production per man-hour has gone down somewhat since the use of prisoner-of-war labor was inaugurated, but he thinks this is largely due to constant changes in the makeup of the crew and the resulting difficulty in developing effective team work. The shifting of prisoners from one employer to another is done in an effort to employ individuals at the highest skill. The important feature, however, from Mr. Kissam's point of view, is the absolute assurance of having a crew on the job every morning. The P. O. W. gang even shows up intact on the morning after paydays-sober, clear-eyed and at least resigned to the tasks confronting them. Some might attribute this dependability to the non-corrupting character of wages which amount to only 80 cents per day, but we suspect that the guard is actually the deciding factor.

[1]See: *New Products Plant at Orlando Reflects Ingenuity of Owner*, Pit and Quarry, June, 1944, page 101.

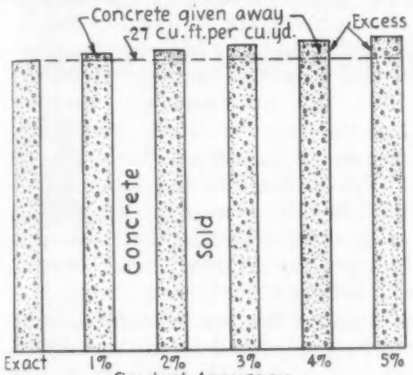
General view of Kissam Builders Supply Company plant at Orlando, Florida, showing concrete-walled ground-level storage bins at left.

The Relation of Yield to Profit In Ready-Mixed Concrete Production

By R. F. MOSS
Vice President,
Scientific Concrete Service Corporation,
Washington, D. C.

another P and Q exclusive

CONTROL of yield in the production of ready-mixed concrete has a vital relation to profit. The producer who values his reputation must set his mixes so that no deliveries are short in volume, that is, so that every cubic yard sold will contain 27 cubic feet or more. When a sincere effort is made to meet this condition, the problem is usually approached in one



1- Batching Control and Yield

of two ways, either by the addition of an arbitrary percentage to the weight of each ingredient as fixed by the mix design, or by fixing the mix design weights so that all the yield variation will be above the minimum limit of 27 cubic feet per cubic yard. In either event, it is desirable to know what the maximum yield variation can be under any given set of operating conditions.

The principle cause of yield variation is, of course, variation in the water content of aggregates. To control yield it is necessary to know how much dry aggregate is included when a given quantity of wet aggregate is delivered to the weigh hopper. The accuracy of yield control will, therefore, depend (a) on the variation in the water content of the aggregates used by any given plant, and, (b) on the accuracy and frequency with which tests for water content are made and used in fixing batch weights. Both vary widely. In the best equipped and managed plants tests are made continually and the information so obtained is used to adjust the batch weights whenever there is a change in water content of any aggregate. At the other extreme, the batch weights for each type of concrete are fixed, no tests for water content are made, and consistency is controlled only by varying added water, using more when the concrete is too dry and less when it is too wet. This method, when used by experienced operators, can produce concrete of passable quality and slump but if there is a wide variation in the water content of aggregates, the yield will vary accordingly, the amount of variation depending on the the conditions under which operations are conducted at any particular plant.

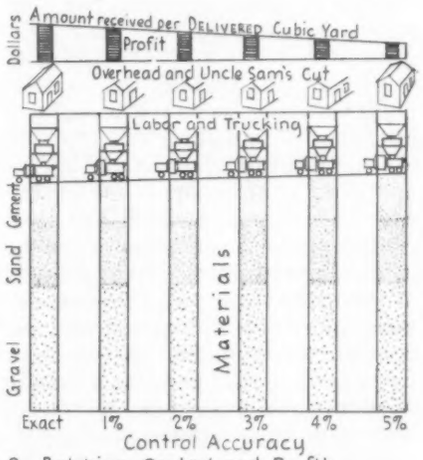
Tests made under actual operating conditions have shown extreme variation of from zero to 18 per cent. for fine and 0 to 6 per cent. for coarse aggregates. The extreme variation under normal batching-plant conditions would probably be from about 2 to 8 per cent. and 0 to 4 per cent. respectively. These figures were used in a recent lecture by Stanton Walker, Engineering Director, National Ready-Mixed Concrete Association before a group of engineers in Washington. Mr. Walker's figures show that if a mix is designed for the mid-water content, that is, 5 per cent. for fine and 2 per cent. for coarse aggregates, and quality control is obtained by varying added water, then the extremes of water content will produce a variation in yield of about 1.1 cubic feet per cubic yard, or 4 per cent.

Under these conditions, if we assume that the mix is designed to produce exactly 27 cubic feet per cubic yard when the water content is 8 per cent. for fine and 4 per cent. for coarse aggregate, and that the mid-water content of 5 and 2 per cent. respectively represents the average operating condition, then the average excess yield would be 2 per cent. If the selling price of concrete is $7.00 per cubic yard, this means that with every yard sold the customer is being presented with a free gift of concrete worth 14c. He agreed to pay $7.00 but actually paid $6.86. If we assume further that the expected net profit is 10 per cent. of selling price then it is clear that 20 per cent. of the expected net profit is being sacrificed to inaccurate yield control.

When this method of operation is combined with the practice of adding 1 or 2 per cent. to the mix-design quantities, as a factor of safety and as advocated in the National Ready-Mixed Concrete Association's bulletin on "Proportioning Concrete Mixes", the amount of concrete given away can easily be 4 or 5 per cent. of total production. Put in another way, up to half the expected net profit can be given away in this manner. This is actually taking place in many concrete plants today.

It is frequently stated that excess yield is made up of a few pounds of aggregates or a few gallons of water, the cost of which is negligible, but it is a fact that these few pounds and gallons are delivered in the form of concrete which has been sold at an agreed price per cubic yard. It is also a fact that if the producer is sure of his quantities, in other words if he is supplying accurately-controlled concrete, this excess material can be billed and collected for at contract prices. With the best of equipment and good management, yield can be controlled to a variation of about ¼ per cent.—2c or less per cubic yard —but if little or no attention is paid to yield control the cost can be enough to make the difference between the success or failure of a business.

One additional factor in yield economics is that all concrete contains air. Even without the use of an air entraining agent concrete usually entrains from 1 to 2 per cent. of air. It is obviously worth while at least to know exactly how much air is actually entrained under any given



2- Batching Control and Profit

set of conditions, for which purpose frequent tests of yield are advisable.

It should also be noted and remembered that excess yield decreases quality. Concrete is always sold on the basis of mix designs which specify the quantity of cement to be used per cubic yard and, whether this figure is fixed by the buyer or by the seller, the quantity of cement used

(Continued on page 145)

National Ready-Mixed Concrete Directors Convene in Chicago

another ON THE SPOT report

ON October 19 members of the National Ready Mixed Concrete Association convened at the Palmer House, Chicago, for the regular midyear meeting of the organization's board of directors under the chairmanship of President Alexander Foster, Jr. Much of the time was devoted to discussions of the relations between employers and employees and of the upward trend of wages under the pressure of demands for new rates that will provide "take-home" pay equal to that earned during the war period. The proposal for a nation-wide minimum wage of 65 cents an hour and the likelihood, if it should become law, of its pushing upward all the rates now paid in occupations which have always been considered more important than that of unskilled labor were recognized as problems that may become very serious.

The Gwynne bill, which has been proposed for the purpose of limiting employers' liability under the Fair Labor Standards Act, seemed to those present to offer some protection against the threat created by the ruling issued some time ago by Administrator Walling. This placed a new interpretation on what constitutes interstate commerce and exposed thousands of employers to the danger of suits for back pay that might be brought by their employees.

Vincent P. Ahearn, the association's executive secretary, brought to his listeners' attention the question of what constitutes compensable time and cited as an example the experience of a company which had been providing free bus transportation for its employees from a certain point in a city to its plant located some distance away. As he pointed out, the company's requirement that the men be present at that point at a certain hour brought them under its control and made its obligation to compensate them begin to run from that time. Men are considered to be at work from the time at which they are required to report, even at a point remote from the place of work and even though no actual work is done.

The provision of jobs for returning veterans should not be overlooked by employers, whose responsibilities are clearly set out in the Selective Service law and the interpretations issued under it by Director Hershey. These interpretations have the full effect of law and must be accepted as law by all employers, said Mr. Ahearn. He reviewed quickly the responsibilities which rest on the employer, namely, to reinstate returning war veterans in the jobs they occupied when they left to join the military forces, to employ them for a year exclusive of plant shutdowns, to discharge veterans of World War I to make places for those of the last war, and, if their old jobs are not in existence, to employ them at other work paying the same wages and without loss of the seniority status they would have enjoyed if they had not left their jobs for military service.

Following a lengthy discussion of price control and its effects on the ready-mixed-concrete industry, the board decided not to apply to the Office of Price Administration for suspension of present price control but, instead, to bring to the attention of the O.P.A. War Adjustment Board the regulations covering contractors and their effect on producers of ready-mixed concrete.

William Pringle, Chief, Mason Materials and Refractories Section, Building Materials and Construction Price Branch of the O.P.A., was a guest of the association. He described the procedures that are appropriate for producers who seek price relief, and drew attention to the new O.P.A. regulation—MPR 592—which became effective August 1 and superseded MPR 188, under which the industry had previously been operating.

William Pringle, recently appointed Chief, Mason Materials and Refractories Section, Building Materials and Construction Price Branch of the Office of Price Administration, lead an open forum discussion of O.P.A. problems at the afternoon session of the meeting. It was brought out early in the discussion that the ready-mixed concrete industry is no longer subject to MPR 188, but is now covered by a new regulation—MPR 592—which became effective on August 1, and which was specifically designed to take care of the building industries. Some of the principles and procedures involved in applications for price increases were outlined by Mr. Pringle's answers to the many, both general and specific questions which were asked concerning the O.P.A. In most cases industry-, area-, or district-wide applications are preferable to individual applications in order to avoid the inequalities that inevitably come about when each producer is handled separately. In applying for a district or area study, 70 to 75 per cent. of production should be represented, and all interested producers should sign the letter of application. Any price adjustment resulting from such a study applies to all producers in the district or area, and not just to those who requested the study.

According to a recent O.P.A. ruling, a sale made to a customer at a low price in March, 1942, does not establish a price ceiling for the customer unless the practice was persistent prior to and up to March, 1942. If, however, the customer had always received preferential treatment in regard to price, the O.P.A. holds that the seller has established the buyer as a purchaser of a different class, and the price charged in March, 1942, becomes the ceiling.

Stanton Walker, director of engineering, reported to the meeting on various technical matters of vital interest to ready-mixed concrete producers. In connection with specifications, Mr. Walker predicted that more than half the states will revise specifications in the forthcoming months, and that a great many new specifications covering ready-mixed concrete will be developed. He mentioned the new Pennsylvania Highway District specifications, which establish limits of 2 to 4 r.p.m. for agitating and 8 to 12 r.p.m for mixing, and which also require that revolution counters be mounted on the trucks.

Mr. Walker said that the next printed Illinois State Highway specification—which will be the first covering ready-mixed concrete—will in all probability fix a 30-minute limit on time of haul. While this restriction is not too serious on highway jobs, it was pointed out that other users frequently request compliance with the Illinois Highway specification.

There was considerable discussion concerning the A. S. T. M. specification which limits ready-mixed concrete to material delivered in agitator trucks, and in effect rules out central mixing with dump-truck delivery. Even before the development of air-entraining cements Mr. Walker said, there were always situations in which concrete could be successfully delivered in dump trucks, and he advanced the opinion that this specification should be reviewed in

the light of recent developments in central mixing. The board of directors passed a resolution requesting that such a review be undertaken by Committee C-9 of the A. S. T. M.

The speaker mentioned some of the research investigations in progress in the association's laboratory at the University of Maryland. In investigating the effect of entrained air on water requirements, it was found that a gallon of air does not reduce the strength of concrete as much as a gallon of water, as was once thought to be the case.

In structural concrete Mr. Walker advises entraining not more than 2 or 3 per cent. of air, since improved workability and plasticity are achieved within this range. When durability is of major importance, he recommends the entrainment of about 6 per cent. air. Air entraining agents of the intermixed type are probably satisfactory in pavement work, but Mr. Walker believes that for general purpose concrete the entraining agent should be introduced at the mixer.

Concrete Masonry Manufacturers Hold Plant Design Conference

another ON THE SPOT report

MAKERS of concrete products met with manufacturers of machinery at the Sherman Hotel, Chicago, September 21 and 22, to examine and discuss layouts for new products plants then building or to be built. The conference was called by E. W. Dienhart, executive secretary of the National Concrete Masonry Association, and gave those present a foretaste of further discussions of the same subject of plant design at the association's 1946 convention to be held at the same place on the 12th, 13th and 14th of next March.

At the first morning session producers were given the opportunity of looking over a variety of plans prepared and submitted by the machinery and equipment manufacturers, and the attention displayed by everyone present was a good measure of the interest in modern plant design and the efficiency obtainable by a proper arrangement of the production equipment.

One machinery manufacturer mentioned the design of a fully automatic plant on which his company is working but which is not yet ready for announcement. It is making a survey to determine under what circumstances it is advisable to produce and market ready-mixed concrete as well as concrete products, and some of the plans displayed showed plants laid out to produce both.

Another equipment builder predicted that 2,500,000,000 concrete blocks will be manufactured and sold in 1946. He said that Argentina, Brazil, Sweden and England are ahead of the United States in the development of concrete masonry .

The importance of providing sufficient floor space was emphasized by another machinery maker as a consideration of major importance.

Executive Secretary Dienhart reminded his audience that at the 1943 convention there had been much discussion of the proper place for the mixer in a products plant, whether it should be on the ground floor or above on the mezzanine. One member expressed the opinion that in a small plant the mixer should be placed on the floor as one man can then handle both the mixer and the block machine, but with regard to large plants other producers expressed a definite preference for having the mixer on the floor above the block machines. One producer, who operates two block machines and intends to add two more, favors placing the mixer on the mezzanine, and believes that material once in motion should be raised as high as necessary for dropping by gravity.

Frank Leftwitch, engineer of the Sinter-Lite Corporation, Bronx, New York, described briefly the process of making Sinter-Lite, a lightweight aggregate manufactured from fly ash. The electric-power companies in some ten or twelve large cities are burning pulverized coal and have accumulated large quantities of this ash which must be disposed of. His company's plant makes use of this material in the making of Sinter-Lite, which it sells to products manufacturers and makers of ready-mixed concrete. The cost of production is about 30 cents per cubic yard in a plant operated by one man. The equipment and process can also be used to beneficiate cinders by removing part of the carbon. The sintering is done at temperatures ranging from 2,400 to 2,500 degrees F. The process can also employ bauxite and other tailings containing not more than 45 to 50 per cent. silica. According to the speaker, blocks made by this process show just as good results in tests as cinder blocks. The process will ultimately be made available to other producers.

At the sessions on the second day modern methods of handing blocks on racks to the curing rooms, to and from storage and handling them in "cubes" to trucks were discussed. One producer told about a method of loading blocks into barges which is now being applied to trucks also. Other subjects discussed were the use of low-bed delivery trucks and methods of installing curing rooms.

The demand for concrete blocks is so great, according to some of the speakers, that their plants could be operated on a 2- or 3-shift basis if the required labor were available.

Moss *(from page 143)*

per cubic yard is reduced if there is any excess yield.

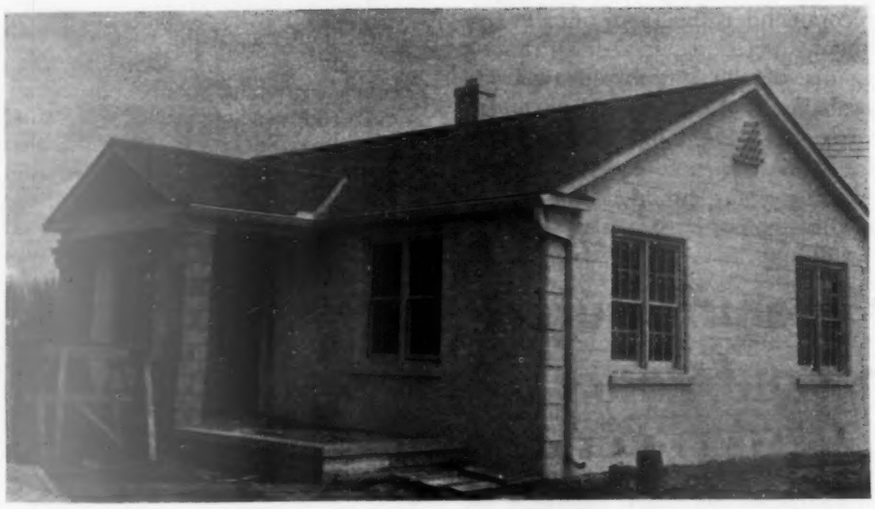
Fortunately accurate control of yield also means accurate control of quality. It can be obtained only by delivery of the desired quantity of each ingredient to every batch, within the closest possible tolerances, and this also provides accurate control of strength and consistency. Such control can be obtained with modern equipment and, when combined with control of gradation, it reaches for the goal of every concrete engineer and producer, exact uniformity. Yield control pays dividends.

Eastern Transit Mix Firm Opens New Dual Plant

The Cement-Mix Concrete Company of Erie, Pennsylvania, has announced the establishment of its dual plant in that city, for the purpose of engaging in the transit mix concrete business. The following equipment is being installed: five 3-cubic-yard Jaeger mixers mounted on Mack trucks; three 2½-cubic-yard mixers mounted on International trucks; one 1½-cubic-yard mixer mounted on a Mack truck; 2 complete batching plants. One batching plant is an Erie Steel Construction Company model of 150-cubic-yard capacity, with a 600-barrel bulk cement bin; the second is a C. S. Johnson plant of 110-cubic-yard capacity, also with a 600-barrel bulk cement bin.

The location of the plant is at Erie Sand & Gravel Company dock, to facilitate securing certified aggregate and making prompt deliveries. E. J. Berry is manager of the plant.

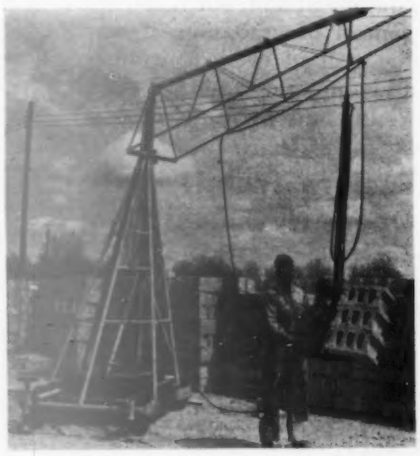
Attractive Company Office Shows Uses of Masonry Units



Office building of the Albany Concrete Products Company of Albany, Georgia, before completion. The interior incorporates a variety of treatments to demonstrate what can be accomplished with concrete masonry.

another ON THE SPOT report

AN extensive improvement and modernization program was well under way at the Albany Concrete Products Company, Albany, Georgia, when PIT AND QUARRY's field engineering editor visited the plant several months ago. Six new kilns, each measuring 9 feet in width by 30 feet in length, had just been completed, and it is planned at an early date to construct another similar battery on the opposite side of a concrete runway. Each room holds ten 50-block racks. The sidewalls are built of Superock block produced at the plant, while the 4-inch arched roof slabs are sand-and-gravel-concrete, reinforced. The slabs were arched in order to prevent staining of the blocks due to condensate dripping from the underside. The vertical lift doors are at present raised and lowered by chain hoists, but eventually it is planned to operate them manually by means of counterweights.



This portable, air-operated machine has speeded up yard handling materially.

Yard handling of the plant's output of Superock block has been materially speeded by the recent purchase of a Warren Yard Hoist,[1] a portable air-operated machine by means of which three 8- by 8- by 16-inch masonry units (or a corresponding number of equivalents) are clamped together and stacked or loaded on a truck with almost no physical effort on the part of the operator. Paved runways have been laid throughout the storage yard as a further means of facilitating block handling and reducing breakage.

In order to have available graphic and convincing answers to the questions which many customers ask concerning concrete masonry construction, J. G. Marbury, owner of the company, has erected an unusually attractive office building at the plant. The exterior walls are built of Superock block and the several rooms are finished in a wide range of treatments selected to show buyers precisely what they may accomplish with concrete masonry construction. It is surely to be hoped that other alert producers will follow Mr. Marbury's example for on the whole the industry provides in this respect a particularly dreary example of the shoemaker's children going unshod.

By WILLIAM M. AVERY

Production is maintained at this plant on two Stearns Clipper strippers, and the comparative performance of these machines provides an excellent object lesson in the value of crew team work. On one of the machines a 5-man crew—2 on the mixer, 1 on the machine, 1 off-bearer and a pallet man—regularly produces 3,300 8- by 8- by 16-inch equivalents in a 10-hour day, whereas on the other machine production averages not over 2,000 units in the same number of hours. Their performance cannot be duplicated by any other group of 5 men in the entire organization.

[1]For a complete description of this machine, see the June, 1945, issue of *The Concrete Manufacturer*, page 106.

In a 10-hour day 5,300 units are produced on these identical machines—3,300 on one and 2,000 on the other. For explanation, see text.

Concrete Pipe and Products Assn. Of Washington Meets in Seattle

Twenty-five representatives of member companies and guests gathered at the Associated General Contractors lounge in the Arctic Building in Seattle, Washington on Saturday, September 22, for the annual luncheon and meeting of the Concrete Pipe and Products Association of the State of Washington. President F. M. Kettenring served as chairman. Following a short business session in the morning a group luncheon was served at the Seattle Engineers Club. The afternoon was devoted to a program of talks and discussion.

The rights and privileges of the returned service men were explained by the first speaker, Arthur W. Buechill, manager of the Seattle office of the United States Employment Service. He interpreted the so-called "G. I. Bill of Rights" as it affects the concrete-products manufacturer, both as to the requirements for re-employment and as to their position as possible competitors under the small-business-loan phases of the bill.

Safety from the humanitarian aspect as well as the dollars-and-cents viewpoint was expounded by R. M. Gilmore, industrial safety engineer with the Washington Department of Labor and Industry. Compulsory industrial insurance in the state may figure as high as 3 cents per hour in some plants, the speaker explained, and pointed out that close adherence to the provisions of the law may reduce this premium to the minimum.

A discussion of plant production, led by Chairman Kettenring, developed some interesting experiences particularly with regard to the use of admixtures. Several of the members reported good results by the addition of Darex to produce an air-entraining concrete that is especially desirable because of its improved workability. Others, from their own experience, declared that the addition of various inert fines, such as talc, had improved strengths and aided in the stripping of the units from the molds. Other topics touched upon were the handling of both pipe and blocks by mechanical means. Power-operated lift-trucks equipped with forks have saved time and cut labor costs for one or more of the members, it was brought out.

In discussing new uses and broadened markets for products, Engineer-Manager C. M. Howard of the Association told of efforts being made among Washington ranchers and dairymen to sell them on the idea of utilizing concrete units for structures as a sanitary, permanent building material that is easy to keep clean, has a low fire-insurance rating, and seldom requires maintenance expense. Improvements in joint construction for irrigation pipelines were also discussed. Nearly all the members are pipe-manufacturers who not only produce the units but lay the lines as well.

While the state of Washington has long been a concrete-pipe stronghold in the irrigation, sewerage, and culvert fields, it was not until the advent of war with its accompanying shortage of lumber that the masonry-unit business began forging to the front. How to retain, much less increase, this business is one of the problems facing the group since the Pacific Northwest has always been the chief source of the nation's lumber.

The meeting closed with the re-election of F. M. Kettenring (Graystone Concrete Products Co., Seattle) as president; J. R. Sherman (Yakima Cement Products Co., Yakima) vice-president; W. S. Wilson (Graystone Materials Co., Olympia) secretary-treasurer.

California Pipe Manufacturers See Bright Outlook for Industry

another ON THE SPOT report

CONCRETE pipe is in big demand in California, particularly for irrigation purposes and the future outlook is extremely promising, the only hampering influence being the scarcity of competent workmen.

This was the view expressed by most of the 65 manufacturers and other participants who gathered at Bakersfield, California, on October 25 and 26 for the semi-annual meeting of the California Associated Concrete Pipe Manufacturers, held at the El Tejon Hotel.

Presiding at both day's sessions was Harold W. Chutter (Jourdan Concrete Pipe Company, Fresno), president of the organization.

The meeting was honored by the presence of Howard F. Peckworth, recently made managing director of the American Concrete Pipe Association with headquarters in Chicago. It was his first official appearance before the California group. He came directly to the Pacific Coast from Washington, D. C., where he has been meeting with representatives of various governmental agencies in the general interest of the concrete-pipe industry. His talk to the conferees at the closing session at Bakersfield dealt with the political aspects of the industrial picture, especially with regard to price and other controls, many of which in Mr. Peckworth's opinion may continue for an indefinite number of months.

Before becoming executive head of the A.C.P.A. the speaker served as assistant secretary of the American Society of Civil Engineers for a five-year period.

There was a lengthy discussion over the advertising program to be carried out by the California association during the coming year, the result being that a decision was reached to place copy on regular schedules in several leading California agricultural papers. Its theme will extoll the merits of concrete pipe for irrigation systems.

Considerable interest was evident in discussions concerning the manufacture and marketing of septic tanks made with concrete pipe. Numerous types have been offered and a standard design is to be drawn by Frank Pisano (Raggio Concrete Pipe Company, San Jose) who has had particular success with this phase of the products business. A descriptive pamphlet is shortly to be published by the association as an aid in selling this item in rural areas and California communities not served by sewerage systems.

Practically all California pipe makers, besides producing pipe itself, are also engaged in laying irrigation lines and the report of the Technical Problems Committee by Acting Chairman Elmer Johnson (Concrete Conduit Company, Colton) dealt largely with field tests on hydraulic capacities of culvert and irrigation pipe.

An automatic float valve for equalizing the flow of irrigating water on hillside plantings was ex-

HANDLING+Processing+HANDLING+Assembling+HANDLING
+Packing+HANDLING+Storage+HANDLING

HANDLING—the Common Denominator of PRODUCTION

LET MEN DIRECT POWER—NOT GENERATE IT!

Cubic transportation—Lifting and placing as well as carrying—is essential to efficient handling. *Where* a product is handled is just as important as *how* it is handled.

Towmotor, capable of moving materials in any plane from floor level to a 20 foot height, provides a means of utilizing all available space. The Towmotor DATA FILE contains details. Your copy is ready now.

TOWMOTOR

THE ONE-MAN-GANG

TOWMOTOR CORPORATION • 1228 E. 152ND STREET, CLEVELAND 10, OHIO

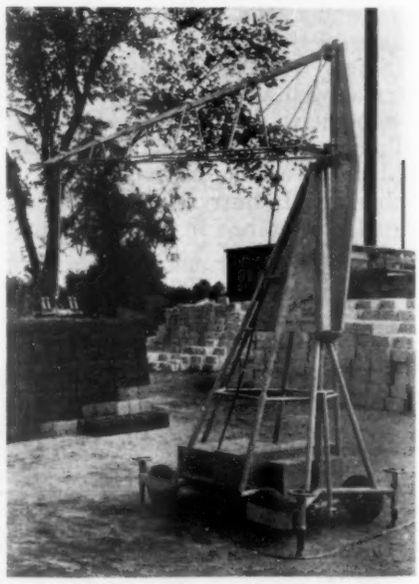
hibited and described by its inventor, R. W. Harris of Covina.

Wage increases, the seniority rights of returning servicemen, and the unionization of industry were topics of discussion that cropped up during the meeting as phases of the labor problem. Mr. Chutter described some of the advantages to the small business man of membership in the California Employers' Association, and E. P. Ripley (General Concrete Products Company, Van Nuys) outlined the master labor agreement which the newly-organized Southern California Concrete Masonry Association has negotiated with labor representatives to cover all workmen of member companies. An advantageous feature of the agreement allows any employee to perform in an emergency any task which might be necessary to continue operation.

Up for discussion was the proposed formation of a trade association for central and northern California concrete-block producers.

● Stearns to Make Hoist

Gene Olsen, president of the Stearns Manufacturing Company, Inc., of Adrian, Michigan, has announced that Stearns will manufacture and distribute



Hoist for loading or unloading units.

the Warren Yardhoist for mechanical handling of concrete block from curing racks to stock-pile and from stock-pile to delivery trucks. This device was developed by Millard Warren of the Southern Cast Stone Co., Knoxville, Tennessee.

One feature of the Yardhoist, said Mr. Olsen, is its ability to pick up block from the racks without top clearance.

Stearns will produce three standard Yardhoist models—a hand-propelled unit operated by an air compressor; a model built as an independent unit, equipped with a gasoline-motor-powered air compressor mounted on the platform of the hoist tower; and a type which incorporates a self-propelling attachment for moving and spotting the yardhoist by its own power.

FREE

PEEP SHOW !

DISCLOSING IN THEIR MOST INTIMATE DETAILS

Views and descriptions of Butler Materials and Handling.

Equipment; — equipment which,—because of Butler Engineered Design, — will be your ally, in meeting the high production demands of the post-war years.

Write and ask for Bulletin 185

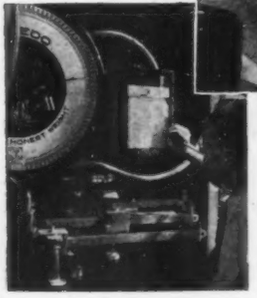
BUTLER BIN CO.
WAUKESHA WIS.

For Improvement in
Quality • Sales • Profits

Install [SC]² PRECISION CONCRETE CONTROL It Includes

Moisture Meter

Makes a test for moisture content of fine or coarse aggregate in ONE minute. Accurate to ¼%.



Compensator

Delivers correct DRY weight of wet aggregates and ADDED water. Makes a graph record of EVERY BATCH.

[SC]² CONTROL produces *uniform* concrete. Is always approved by concrete engineers. Has definite sales value. Write for our booklet "Profits in Concrete."

SCIENTIFIC CONCRETE SERVICE CORP.
724 Salem Avenue, Elizabeth 3, N. J.

NEW MACHINERY and SUPPLIES

● Portable Elevating Unit

Reconversion from war to peace has been quickly accomplished by Mixermobile Manufacturers of Portland, Oregon, and the company is reported engaged in supplying a back-log of orders.

Illustrated here is the concern's newest development, the "Towermobile," a

Tower equipment set up.

portable truck-mounted elevating unit of particular interest to producers of ready-mixed concrete. Set up at the job, this piece of equipment elevates and distributes the concrete from the truck-mixers to any desired height. The 35-foot hoist tower is standard equipment, but this height may be increased by the addition of 10-foot tower sections, similar to those used with the Mixermobile. The hopper has a capacity of 1½ cubic yards of concrete and the concrete bucket holds ¾ cubic yard. Truck-mixers can discharge at either side of the unit, which is operated by one man within the cab.

Another piece of equipment made by this concern is its Scoopmobile. It is a power-operated loading, digging and lifting unit, designed for easy maneuverability.

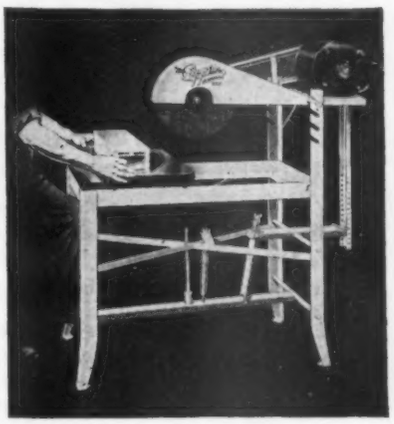
Other items in the company's line include the popular Mixermobile, a complete portable concrete-mixing and elevating plant; the Buggymobile, a power-operated concrete buggy; the Dumpmobile, for moving and dumping bulk materials; the Hoistmobile, a mobile hoist with boom; the Wagner Mixer, a complete, mobile concrete mixer; and the Wagner Truck Crane, a truck-mounted crane equipped with a patented folding boom.

● Electric Lift Truck

An electric lift-truck, known as Power-Ox, capable of handling a 4,000-pound load, is now being manufactured by the Barrett-Cravens Company of Chicago Illinois. This new product incorporates natural hand control and rear-wheel drive, with a separate motor and protected double reduction roller-chain driving each

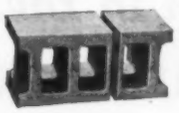
FASTER CUTTING ...with Clipper Masonry Saws

Your Special Size and Shape Brick or Concrete Block can now be "Tailor Made" at a moment's notice!



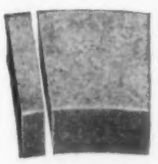
The new Clipper Multiple Cutting Principle makes possible faster cutting of every masonry material regardless of hardness.

Here are a few typical examples of the speed and accuracy with which concrete products and fire brick can be cut.



This concrete block, converted into a special size, was cut completely in two in 19 seconds.

One of the many intricate cuts performed on first quality clay brick for heat treating furnaces —made in 8 sec.



Rotary Kiln Blocks, cut to size for "key" bricks in rotary kilns, require only 10 sec. for completion of cut.

Basic refractories for steel furnaces or cement kilns must be accurately installed. This magnisite brick was cut in 12 seconds!

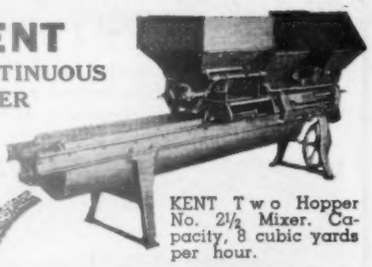
Clipper Saws are available for trial. Write for Descriptive Catalogs.

THE Clipper MANUFACTURING COMPANY

4029 MANCHESTER
ST. LOUIS, MISSOURI

"IT JUST KEEPS ROLLIN' ALONG"

KENT
CONTINUOUS
MIXER



KENT Two Hopper No. 2½ Mixer. Capacity, 8 cubic yards per hour.

A STEADY STREAM OF PERFECTLY PROCESSED CONCRETE— insured by this KENT machine—is just what your block plant needs to establish output and profit records.

KENT accuracy in measuring cement and aggregates — KENT thoroughness of mixing — KENT simplicity and durability — KENT operating economy—enable concrete block producers everywhere to handle current orders and "get set" for bigger post-war business.

For Clean Pallets . . .

dip 'em in the

KENT DUNKER

Your pallets will mold better blocks and give longer service if they are regularly cleaned and oiled in a KENT Dunker. Hang 'em on the pins—as you take them off, the rest are rotated through the tank. Truck crank case oil works perfectly.

Write for Bulletin

The KENT MACHINE CO.
Cuyahoga Falls, Ohio

Rear-wheel drive truck

wheel. The lifting operation is controlled through the truck handle, while locomotion is accomplished by means of the electric drive which is operated by buttons located in the handle. Sizes range from 42 inches to 72 inches in length. The motors require standard industrial 12-volt type batteries.

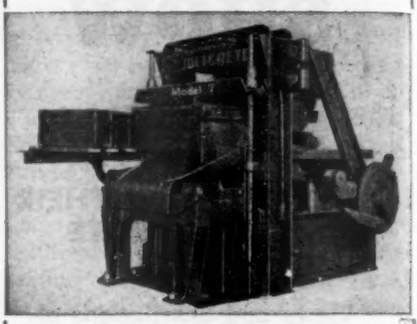
MANUAL FOR USING DAREX *AEA*. 18 pages. Dewey & Almy Chemical Company, Cambridge 40, Massachusetts.

IT'S "CONTROLLED AIR." 8 pages. Form 96-45-2. Dewey & Almy Chemical Company, Cambridge 40, Massachusetts.

SCOOPMOBILE. 4 pages. Mixermobile Company, Inc., Los Angeles 14, California.

CLARK CARLOADER METHOD. 14 pages. Clark Tructractor Division of Clark Equipment Company, Battle Creek, Michigan.

The Vibration Machine Supreme

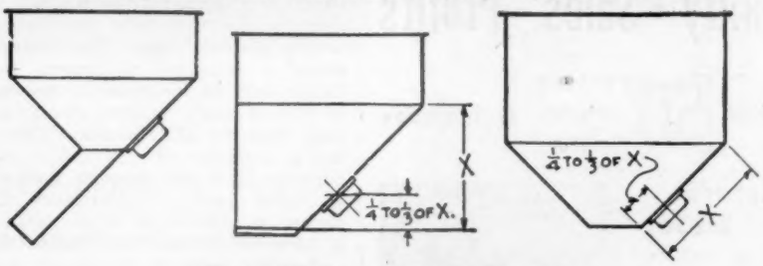


Vibration under pressure — 7,200 blows per minute—and ruggedly built to give long life, the Joltcrete machine is the choice of the wise concrete-products operator. Produces clean-cut, high strength units in any size, and gets the most out of a bag of cement. Built in three sizes with capacities of 7 to 9 standard units per minute.

Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers and Joltcrete, Stearns mixers and Cast Iron and Press Steel pallets, Straublox oscillating attachments, etc. Repair parts for: Anchor, Ideal, Universal, Stearns, Blystone mixers and many others.

ANCHOR CONCRETE MACHINERY CO.
G. M. Friel, Manager **Columbus, Ohio**

STUBBORN BINS AND HOPPERS



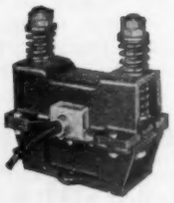
FLOW FREELY

When Equipped With

SYNTRON

"Pulsating Magnet"

ELECTRIC VIBRATORS



With Rheostat Controlled Adjustable Power

3600 powerful vibrations per minute

break down arching-over and plugging.

MADE IN EIGHT SIZES

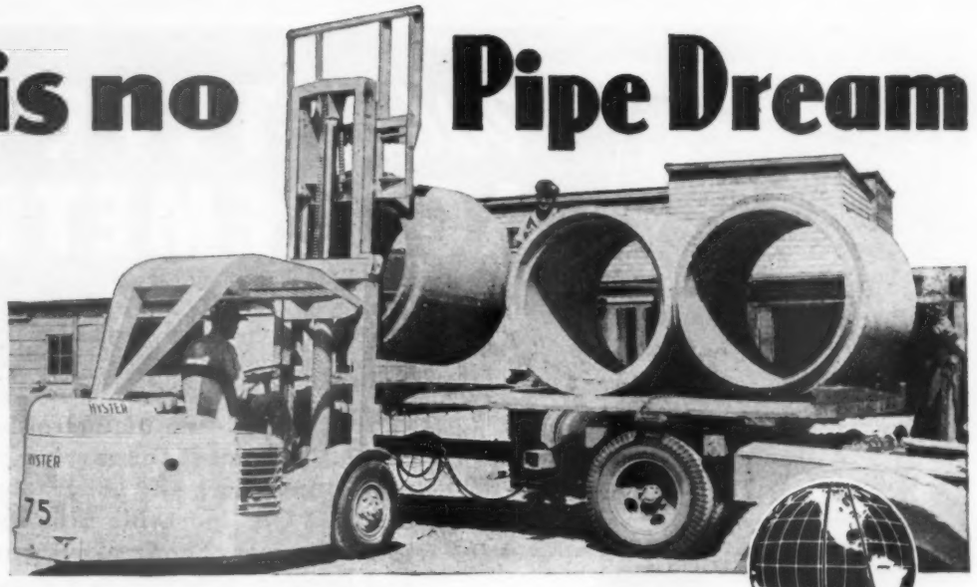
4 lb. - 9 lb. and 15 lb. "NOISELESS MODELS"

25 lb. - 55 lb. - 75 lb. 200 lb. and 500 lb. "IMPACT MODELS"

Write us about your problem—giving dimensions, thickness of hopper walls, material handled, etc.

SYNTRON CO., 385 Carson, Homer City, Pa.

This is no Pipe Dream



The HYSTER 75 Fork Lift Truck really solves materials handling problems. The pipe in the picture is 54" concrete culvert. Powerful hydraulic mechanism provides easy, positive lifting of loads, up to 7500 lbs. Pneumatic tires insures good traction **anywhere.**

Through trunnion steering, it turns in its own length. Standard controls; easy to operate. Send for booklet on the HYSTER 75 — learn how it solves materials handling, saves time and lowers costs.

345-31

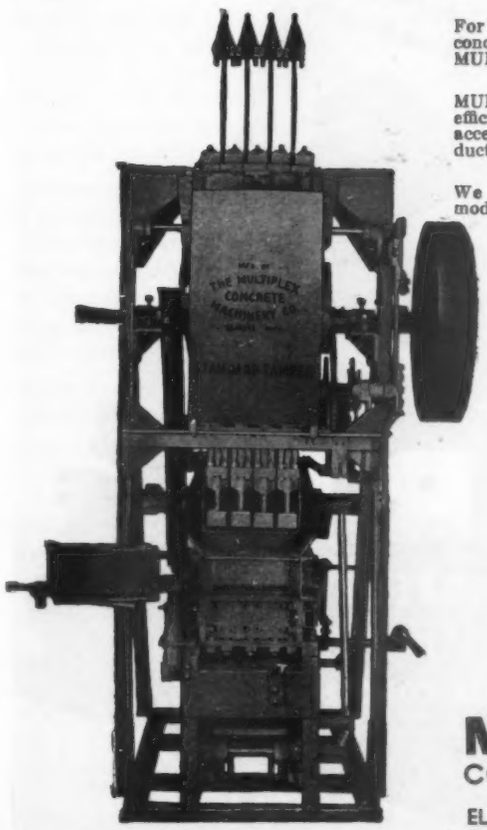
HYSTER Company

2926 N. E. Clackamas Street
PORTLAND 8, OREGON

1826 North Adams Street
PEORIA 1, ILLINOIS

BRANCH OFFICES: 221 N. LaSalle St., Chicago 1, Ill.; 90 West St., New York 6, N. Y.; 1022 Denrike Bldg., Washington 5, D. C.; 233 Ninth St., San Francisco 3, Calif.; Masonic Bldg., New Orleans 12, La.; 2219 Fourth Ave., Seattle 1, Wash.; 2700 Santa Fe Ave., Los Angeles 11, Calif.; 215 Euclid Ave., Cleveland 14, Ohio; 211 Farnsworth Bldg., Memphis 3, Tenn.

MULTIPLEX Machines For Postwar Profits



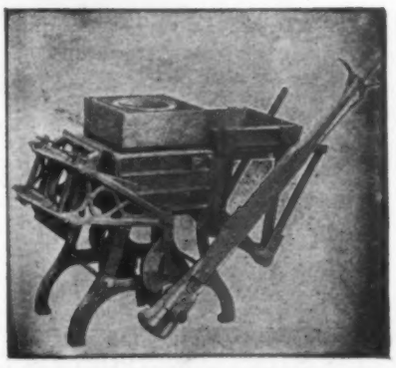
For a Quick "Take-Off" and sustained pace in concrete block output, reserve one of the MULTIPLEX *high-speed* machines.

MULTIPLEX offers a wide variety of super-efficient mixing equipment, with all types of accessories necessary for economical mass production.

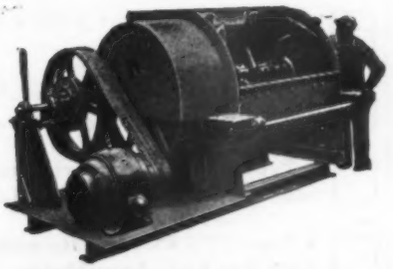
We can recommend MULTIPLEX units for modernizing *your* plant and enlarging its capacity.

Our universal type MULTIPLEX Standard Tamper for making plain and stripper, or face blocks, on one base. Easily convertible as business expands. Supplied with 4-bar or 8-bar tamper, either power or hand operated.

Write for Booklet describing the MULTIPLEX complete line of concrete mixing equipment, including Double and Single Hand Press Strippers, Power Press Strippers, and Super-Tampers.



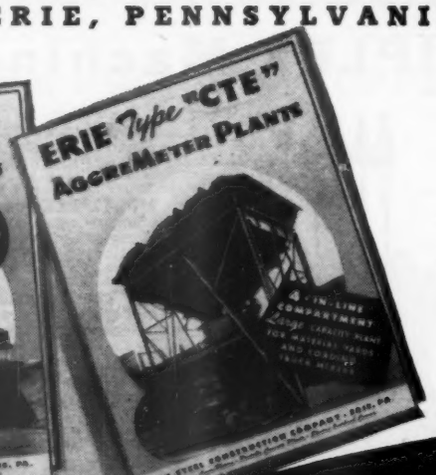
The MULTIPLEX Flue Block Machine makes ventilated, solid or lightweight units, including all attachments for ventilator and stove pipe openings.



MULTIPLEX Multi-Mixer with reverse screw-type action insures fast and thorough mixing of every batch. Side, end or bottom discharge.

MULTIPLEX
CONCRETE MACHINERY CO.
Frank Muenzer, President
ELMORE • OHIO

What TYPE OF ERIE AGGREMETER *meets your needs - -*



THE ERIE line of AggreMeters is in production. It is broad to meet the varying needs of concrete producers, material dealers and contractors. From the standardized line of "GA" portable bins in 36, 52 and 68 yd. capacities to the largest of central systems to handle both aggregates and cement, Erie builds a complete line.

Erie builds AggreMeters with 2 to 9 compartments, with compartments for aggregates and cement or with separate cement bins. Weighing AggreMeters or batchers are built with weighing beams or dial scales in sizes for any mixer from ¾ to 5 cu. yds.

Write for the Erie booklets that help you to select the right plant.

Consult with Erie engineers whose background of over 25 years of application experience can help to modernize your central concrete plant or bin storage facilities.

ERIE STEEL CONSTRUCTION CO.
ERIE, PENNSYLVANIA

ERIE STEEL CONSTRUCTION CO.
6511 GEIST RD. • ERIE, PA.

Please send me a copy of the booklets checked:

- ☐ • Type GA Portable with 1 to 2 yd. AggreMeter.
- ☐ • Type CTB 3 Compartments - Permanent with 3 - 4 or 5 yd. AggreMeter.
- ☐ • Type CAB 3 Compartments - Semi-Portable with 1 to 2 yd. AggreMeter.
- ☐ • Type CTC 4 Compartments - Square type with 2 to 5 yd. AggreMeter.
- ☐ • Type CTE 4 Compartments - in line with 1½ to 5 yd. AggreMeter.

ERIE
AGGREMETERS
BUCKETS ★ TRAVELING CRANES
PORTABLE CONCRETE PLANTS

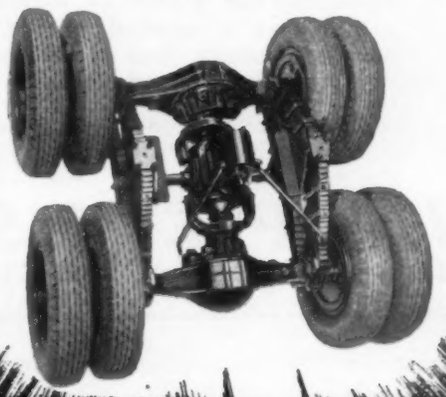
TRUCKING COSTS GO UP

PROFITS AND PERFORMANCE GO DOWN

When You Install THORNTON 4-REAR-WHEEL DRIVE

HERE IS THE UNIT

which converts a medium 1½ - 2 ton truck into a heavy duty, six wheel truck capable of hauling 8 to 10 tons payload. Delivered complete with 8 new tires. No priorities or WPB release required.



The truck which consistently hauls its loads at the lowest cost is the greatest profit maker. This is the real reason for the big increase in the number of trucks equipped with Thornton Drives. As a typical example:

*A fleet operator selected two standard 1½ ton trucks and equipped one of them with a Thornton Four-Rear-Wheel Drive. He operated both trucks for one year on the same contract. The standard truck could work only 204 days due to bad weather and road conditions. This truck earned a net profit of only 14%.

As compared with this, the Thornton equipped truck worked 251 days, an extra 47 days gained because Thornton's *two* driving axles and 100% greater tractive effort enabled it to operate on soft ground that stopped the standard truck. Also the Thornton unit hauled 100% more payload on each trip. After paying for the equipment and all expenses, the owner had a net profit of 112%.

Today this owner's trucks are all equipped with Thornton Four-Rear-Wheel Drives.

Name furnished on request.

HERE IS WHAT IT DOES:

- Carries 100% more payload even under toughest conditions.
- Out-pulls, out-lasts, out-maneuvers standard trucks costing double or more.
- Its two-speed gear case provides 100% greater tractive effort or rim-pull.
- Gives better springing. Thornton's walking beam type of spring suspension insures equal load distribution between the two driving axles.
- Six wheel brakes assure greater safety.
- Saves tires . . . gasoline . . . oil . . . wages and time.

GET THE FACTS, AND YOU, TOO, WILL LEARN REAL TRUCKING ECONOMY

The heart of the Thornton Drive is the exclusive Thornton Automatic Locking Differential which gives both axles positive drive and differential action without "Axle Fight".

EVERY

THORNTON 4-Rear-Wheel DRIVE

INCORPORATES A

THORNTON Locking DIFFERENTIAL

ALSO AVAILABLE FOR TRUCK AXLES

Thornton Tandem Co.

8701 Grinnell Avenue, Dept. 69, Detroit 13, Michigan, U.S.A.

Please send me catalog of facts on changing my 1½-2 ton truck into a heavy duty truck.

Name_____

Address_____

City_____ State_____

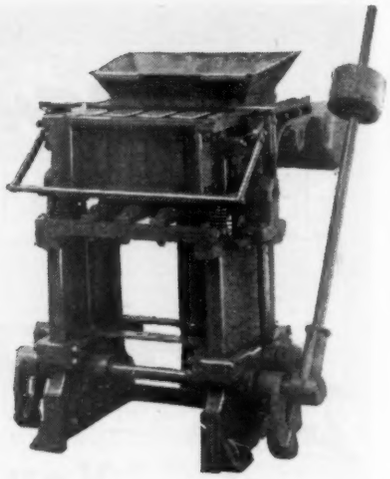
Make of Truck_____ Year_____

Used for_____

The APPLEY "LITTLE GIANT"

A SUPERIOR VIBRATOR

for only $995.00 F.O.B. FACTORY



So economical is this machine in operation . . . of such uniform high quality is the block made on it, that manufacturer after manufacturer who started out with one unit is adding two, three and four more.

The Little Giant is a low-priced vibrating machine that moulds perfectly cut blocks of maximum strength and density. Vibration is applied to the mould box while cores remain stationary, thus producing a superior block with square true corners and a smooth face.

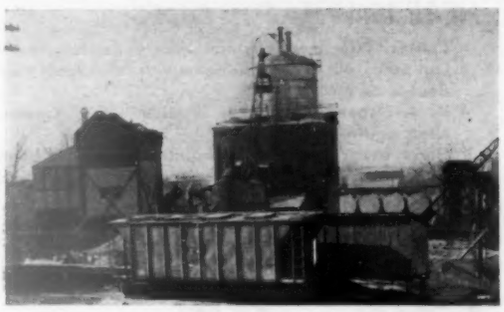
This is the block machine you want to investigate. Write today for descriptive literature.

Simply designed and durably built, the Little Giant makes 100 8"x 8"x 16" units per hour. Interchangeable cores and partition plates permit manufacture of 6 standard types of block.

J. W. APPLEY & SON, Inc.

831 ● NINTH ST. N. ● ST. PETERSBURG 4, FLA.

How to CUT CEMENT COSTS



1. Buy in BULK 2. Handle by AIR
3. Use the ROBINSON AIR-ACTIVATED SYSTEM

There's no need to tell you about the advantages of buying cement in bulk. So, we'll skip to Reason No. 2 . . . Handle bulk cement by air. It's faster, cleaner and more flexible. It involves less maintenance. As for Reason No. 3 . . . The ROBINSON CONVEYING SYSTEM "floats" rather than blasts the cement through the pipe. It has high capacity over long distances, up steep grades and around bends. It has no continuously moving parts such as gears, screws, shafts or bearings.

Bulletin 310 gives further details. Write for a copy.

ROBINSON *Air-Activated* Conveyor Systems

Division of MORSE BOULGER DESTRUCTOR CO.

EAST 42nd STREET NEW YORK 17, N. Y.

Representatives in All Principal Cities

CONCRETE BURIAL VAULTS

America's Finest Molds and Lowering Device

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TERRITORY FRANCHISES

BERG VAULT CO.

EQUIPMENT DIVISION
1620 LUCAS HUNT RD.
ST. LOUIS, MO.

The
Power Lift Truck

Ericksons have stamina, power, speed and maneuverability. Big pneumatic tires on drive wheels. No paved runways required. All steel welded construction. Speedy hydraulic platform raiser. Simple controls. Write for complete details.

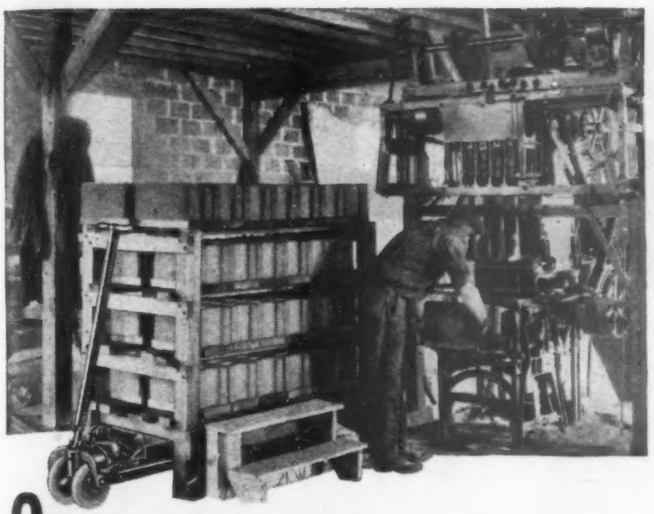
ERICKSON

LIFT TRUCKS, PLATFORM TRUCKS, HIGH AND LOW LIFT FORK TIERING TRUCKS.

For Fast Movement of Large Quantities of Block

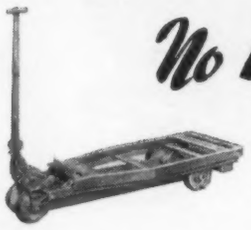
ERICKSON SPECIAL EQUIPMENT MFG. CO.

109 14TH AVE. N. E. • • MINNEAPOLIS, MINN.



ONE MAN HANDLES 48 BLOCKS . . .

No Breakage!



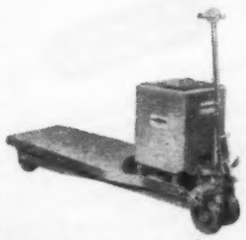
Yes, *one man* with a Barrett Lift-truck handles 48 of these standard concrete blocks 8″ x 8″ x 16″ (or 32 of the 8″ x 12″ x 16″ size). Holding the Lift-truck handle in any position, he raises the load with a single downward sweep. For lowering, he steps on the release pedal . . . and the load settles gently to the floor under control of a hydraulic check.

Barrett Lift-trucks Cushion the Ride

Blocks are moved from machine to curing room and through storage without breakage, protected from jolts and jars by super spring frame and rubber tires. Other features include Hyatt bearings . . . Zerk lubrication . . . and four-wheel construction. The initial cost is low—maintenance, almost nil. Ask a Barrett engineer for a demonstration of Lift-truck performance, or write for illustrated circular.

and for electric drive . . .

THE POWEROX!



Cuts handling time and effort to an absolute minimum. Hand lift—electric drive. Loads are raised with a few short strokes of truck handle. Forward and reverse motion of truck is electric, controlled by push buttons. Automatic brake, dual motors, rear wheel drive. PowerOx provides real economy without a large investment. Write for details today!

BARRETT-CRAVENS COMPANY
3251 West 30th Street • Chicago 23, Illinois

Representatives in All Principal Cities
Canadian Licensee: S. A. Armstrong, Ltd., Toronto

Barrett Handling Equipment

BARRETT

ONE MAN DOES MORE THAN 3 OR 4 . . . WITH A BARRETT

Get up-to-date on TRUCK MIXERS Send for NEW JAEGER CATALOG!

Shows you the latest advances in design, mounting, power transmission, water control, speed of charging and discharging and "Dual-Mixing" that put these Jaeger "Speed Merchants" 5 YEARS AHEAD of any other truck mixer in the field. Catalog TMH-5 gives full details. Ask for your copy today.

"HI-DUMP" Models in 2, 3, 4½ cu. yd. sizes

"LOW CHARGE" models to 8 cu. yds.

THE JAEGER MACHINE CO. 602 Dublin Ave. Columbus 16, Ohio

REGIONAL OFFICES: 8 E. 48th St. NEW YORK 17, N. Y. · 226 N. LaSalle St. CHICAGO 1, ILL. · 235-38 Martin Bldg. BIRMINGHAM 1, ALA.

Make 6″ to 48″ CONCRETE PIPE with ONE Machine

Produce Pipe Profitably

Universal's "All-Purpose" Machine produces Concrete Pipe in all sizes from 6″ to 48″—and shows you a worth-while profit. With a tamping capacity of 680 strokes per minute, your product is more dense, durable, finished in appearance. We can also outfit you for making larger sizes, up to 135″.

Write today for Catalog and Details.

CONCRETE PIPE CO.
Columbus 15, Ohio

Here are the reasons Stearns mixers excel and continue to be the most popular mixers on the market

New Mixer Folder illustrating and describing these machines will be sent upon request.

- ***Lowest charging height.***
- ***Lowest Maintenance:*** Wear-resisting, removable, quickly shifted liner bars and adjustable "Sterloy" mixing blades reduce maintenance to the vanishing point.
- ***Conveniently located*** door control and handy bag shelf save time, waste motion.
- ***Discharge door*** opens easily, locks tight, won't leak.
- ***Bearings:*** Self-aligning, anti-friction, dust proof.
- ***Drum of steel plate*** welded to heavy heads assure extra long life.
- ***Stearns Mixers*** do a fast job of better mixing for less money. They are supplied in 12, 18, 28, 42 and 50 cu. ft. capacities with pulley, V-belt or Gear-head motor drive.

Performance Speaks Louder than Words

A FEW OF HUNDREDS

EARL HEBNER & SONS
Bad Axe, Michigan
Two Clipper Strippers

ALBANY CONCRETE PRODUCTS CO.
Albany, Georgia
One Clipper Stripper

DELAWARE BLOCK COMPANY
New Castle, Delaware
One Clipper Stripper

ASK ANY STEARNS OWNER

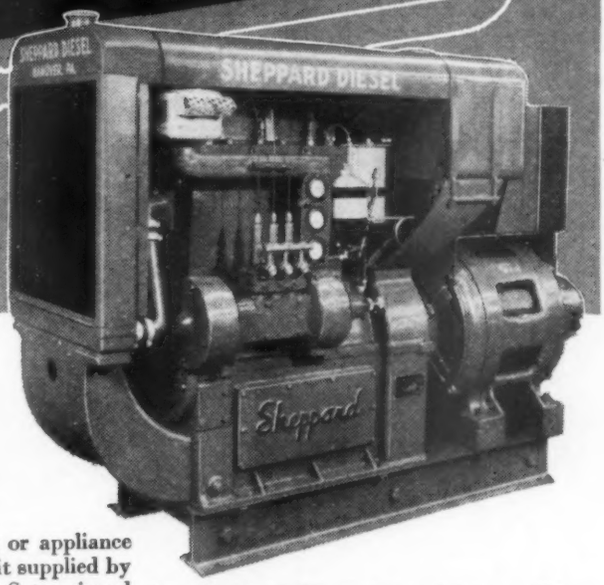
STEARNS

GENE OLSEN, PRESIDENT

Designers and manufacturers of vibration and tamp type block and brickmachines . . . Mixers . . . Sip Loaders.
Licensed under the Gelbman Vibration Patents

THE **FIRST** ALL-AMERICAN DIESEL IS **FIRST** AGAIN!

Completely Automatic LOAD STARTING WITH SHEPPARD DIESEL GENERATING SETS



Sheppard Model 6A direct connected to an 18.7 KVA-AC 120/240 volt, 1200 RPM generator. This unit is equipped with LOAD-CONTROL. No special wiring is required ... just connect to present service leads.

Flick Any Switch on the Power Circuit ... LOAD-CONTROL Does the Rest!

LOAD-CONTROL ... the fully automatic *LOAD* starting and stopping of Sheppard Diesel Generating Sets ... makes it possible for operators to realize still greater power-cost savings than they are now enjoying. Because Sheppard LOAD-CONTROL cuts operating time of the power plant to periods when power is actually required, it reduces fuel consumption and prolongs the life of equipment.

LOAD-CONTROL is exactly what its name implies. The load demand on the power circuit controls the starting and stopping of the power source. The term—"automatic starting and stopping"—has been loosely applied to other control systems. However, these have been merely remote station control by a manual or thermostatic switch.

The flick of any lighting or appliance switch on an electrical circuit supplied by a Sheppard Diesel Generating Set equipped with LOAD-CONTROL will automatically start the generator. Power is instantly available. Turn off the switch and LOAD-CONTROL immediately stops the unit.

Sheppard LOAD-CONTROL requires no special wiring. Simply connect to present service leads. Available with any single or 3 phase AC Sheppard Diesel Generating Set. Mail coupon today for complete information about this exclusive feature.

* * *

Sheppard Diesel Units are also available with:

Remote station control from manual, thermostatic or similar type switch.

Line failure starting and stopping for use on standby generating sets.

Generating Sets—3 to 36 KW • Marine Engines—8 to 62 HP • Power Units—8 to 56 HP

Sheppard

ALL AMERICAN DIESELS

R. H. Sheppard Co.
2913 Middle St.
Hanover, Pa.

Please send me complete information on Sheppard Generating Sets equipped with LOAD-CONTROL.

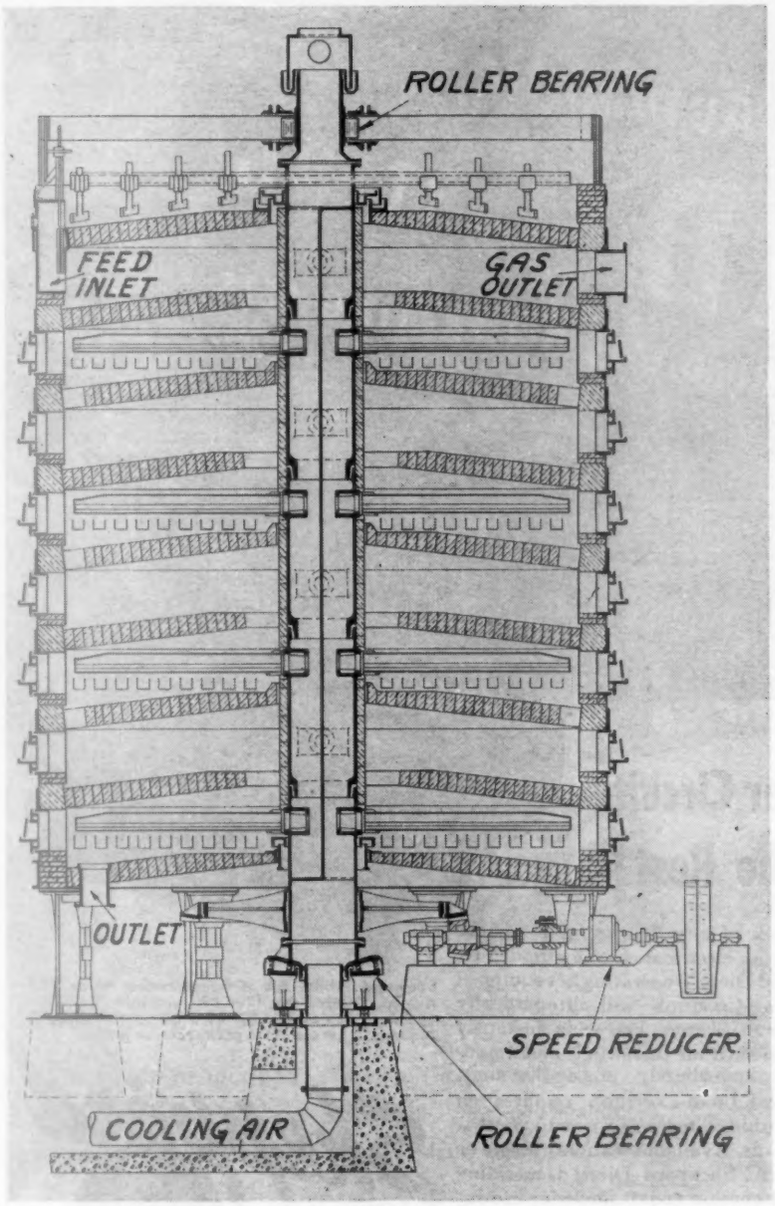
Name.....

Firm Name.....

Address.....

Load-Control ... the Phantom Engineer

If you are producing AGRICULTURAL (Hydrated) LIME



Read this:

THE Skinner Multiple Hearth Roaster has many applications, one of which is extensive use in calcining precipitated calcium carbonate for beet sugar refineries. Chemically the latter process is identical with the calcining of limestone (3/8" to dust) to produce quicklime for hydrating.

Description and Advantages — Consists of a series of superimposed hearths encased in a rigid steel skeleton or shell. The material is rabbled over each successive hearth from top to bottom by rotating arms with teeth, all detachably fastened to a central hollow shaft. The shaft is designed for ample forced air cooling to both shaft and arms.

Shaft and arms are supported by a large specially designed roller bearing, insuring long, trouble-free operating life at any desired speed. Outer drop holes are arranged to permit cleaning from outside the furnace. Easy access to inside during operation. Simple adjustment of vertical shaft. Quick replacement of arms or teeth without cooling furnace. Coal, oil or gas fuel.

Sizes — From small 4 ft. internal diameter experimental model with 4, 6 or 8 hearths, up to 20 ft. diameter with as many as 12 hearths.

One of our engineers will gladly discuss either calcining or sand washing with you personally without obligation.

This company also manufactures the well-known Akins Classifier which has one major application in the rock products field, viz., the washing of special sands, as for foundries and glass making.

COLORADO IRON WORKS Company

Canadian Locomotive Co., Ltd., Kingston, Ont., Can.
Vancouver Iron Works, Ltd., Vancouver, B. C., Can.
Head, Wrightson & Co., Ltd., Stockton on Tees, England
Head, Wrightson & Co., (So. Africa) Ltd. Johannesburg
The Clyde Engineering Co., Ltd., Granville, N. S.W.

MAIN OFFICE & WORKS: DENVER 2, COLO., U. S. A.

Here Today (Producing 1,026-tons aglime, daily average)

Day after day this versatile Universal portable crushing plant turns out 100 to 114-tons of aglime for L. T. Renner of Rock Falls, Illinois. With a simple 15-minute adjustment both aglime and road rock can be produced without changing the screens. Plant consists of a 546-P primary crushing unit with 20" x 36" jaw crusher and 36" x 8' apron feeder, secondary pulverizer, 4' x 12' double deck screen, 3 compartment bin (lime, rock and surge compartments), conveyors.

gone tomorrow! (Moved on a moment's notice).

With all the ruggedness and stability of a lifelong permanent installation, this Universal engineered plant can be quickly moved to a new location. Primary and secondary units and bin with screens are built on chassis, on which pneumatic-tired wheels are readily installed. Renner gets flexibility of product, lowest cost per yard of finished material and mobility of entire plant. Send for further facts.

Universal Engineering Corporation
619 C Ave. West, Cedar Rapids, Iowa

Photos courtesy Eighmy Equipment Co., Rochelle, Ill.—another "live wire" Universal dealer!

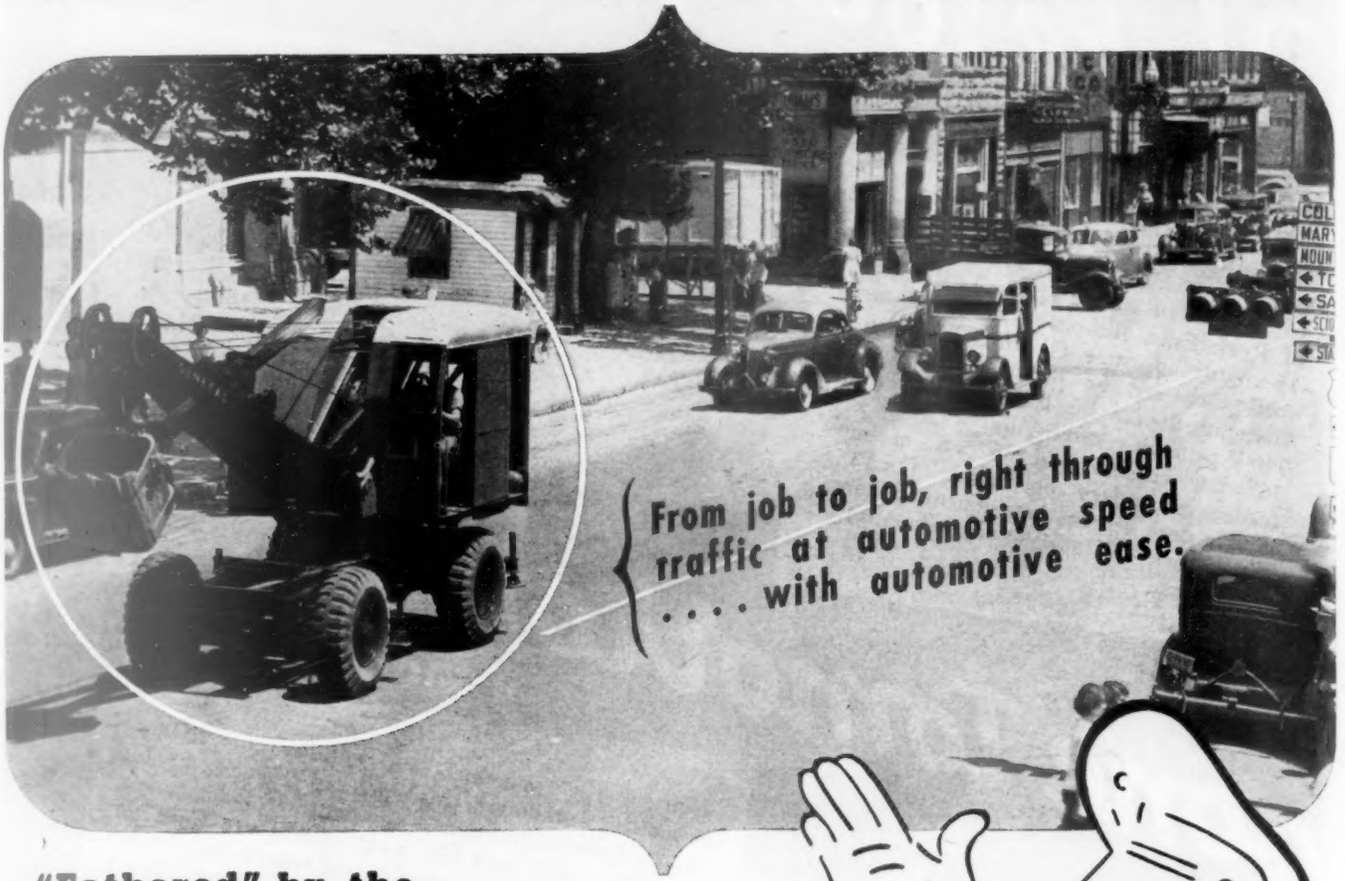
ARMY NAVY

UNIVERSAL

ROCK AND GRAVEL CRUSHERS, CRUSHING ROLLS, HAMMER MILLS, COMPLETE CRUSHING AND SCREENING PLANTS, WASHING PLANTS, ASPHALT PLANTS, SPREADEROLLERS.

"WRAPS" ARE OFF

The Latest and Greatest Development of a 5-Year-Old INDUSTRY "FIRST"



"Fathered" by the World-Famous SUPERCRANE

. . The Amazingly New and Different

General Type 10 MODEL 105

ONE-MAN . . . ONE-ENGINE . . . ON RUBBER

Five years ago General "scooped" the industry with a great "first"—the one-engine, one-man operated, pneumatic-tired Supercrane. Carrying this development a great stride forward, General now takes the "wraps" off the *original* "Machine of Tomorrow." First announced more than a year ago, General's revolutionary Type 10, Model 105, is a profit-building rig that will go out and do more kinds of work—faster, better and cheaper—than you ever believed possible with a single machine . . . ½-yard shovel, crane, backhoe, dragline, clamshell, magnet and piledriver "rolled into one" and rolling with automotive smoothness on a cushion of air.

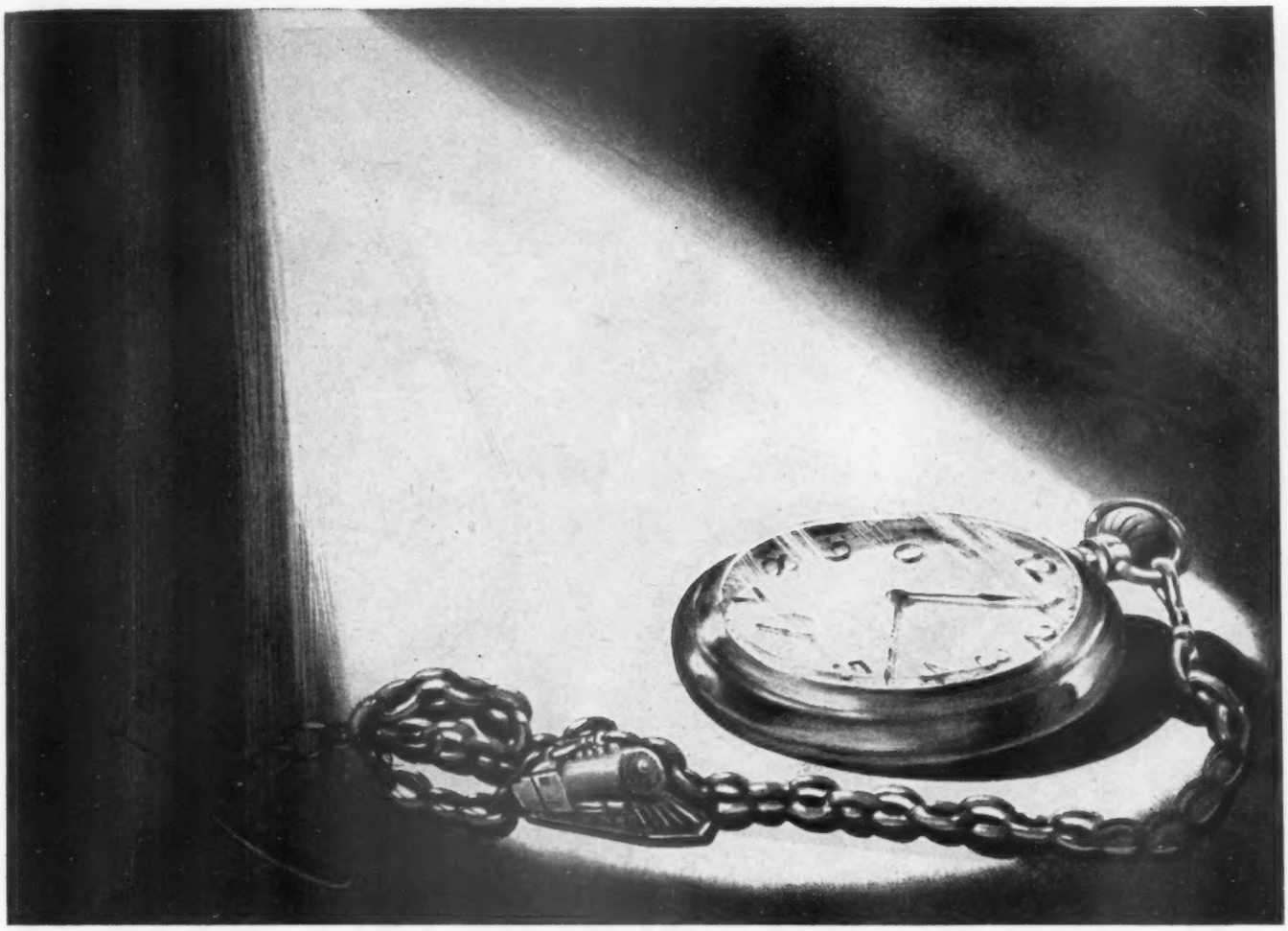
Here is mobility you must see in action to appreciate. Here is easy, positive, instant-response, metered air control you can "feel" and guide with your fingers at all times. Here is a design so practical that swing, travel and boom hoist may be performed independently or simultaneously.

Test-Proven Advancements

Fast highway travel (20 "plus" miles per hour); optional 4-wheel drive; air booster steering; independent, easily accessible assemblies; heavy-duty engine, transmission and clutches; self-counter-weighting machinery; 4 speeds forward and reverse; quick interchangeability of attachments . . . are only a few of the remarkable test-proven advancements. Write for the full story today!

THE GENERAL EXCAVATOR CO., Marion, Ohio. Builders of the famous Supercranes and a complete line of shovels, draglines and related equipment; diesel, gas, electric—½ to ¾ yd.

GENERAL EXCAVATOR CO. CRANES-SHOVELS MARION OHIO U.S.A. GENERAL DIESEL

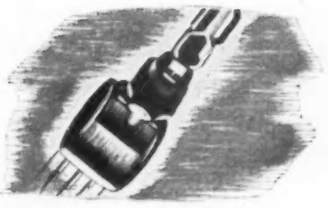


Wire rope *Dependability* means low cost usage!

Unless the wire rope you select has the *reserve dependability* that provides for an *ample* factor of safety, it will become a costly purchase. Selection of the *right* rope means long, low-cost service . . . true economy!

Dependability, safety and long, low-cost performance of Wickwire Rope starts with the production in our own open hearth furnaces of the correct composition of steel for use in each rope. Here, wire-steel characteristics can be accurately predetermined by the scientific blending of the proper ingredients in the correct percentages to produce the one wire rope best suited for your specific purpose.

At Wickwire *every* step in wire rope manufacture is carefully scrutinized. Special control is exercised through each successive wire drawing operation, and right through to the final laying of every type, size and construction of wire rope. This close watch over quality assures the utmost in wire rope dependability and long service.



Thousands of wire rope users—old hands and new—have found our specially prepared manual, "Know Your Ropes" valuable in making their work easier and prolonging rope life. It contains 78 "right and wrong" pictures, 40 wire rope life savers, 20 diagrams, tables and charts. Send for your FREE COPY today.

WICKWIRE SPENCER *Steel Company*

500 FIFTH AVENUE, NEW YORK (18), N. Y.

ABILENE (TEX.) • BOSTON • BUFFALO • CHATTANOOGA • CHICAGO • CLINTON (MASS.) • DETROIT • HOUSTON • LOS ANGELES • PHILADELPHIA • SAN FRANCISCO • TULSA • WORCESTER

HOME for them!

and the HOME STRETCH for YOU!

You still have time! In December, your employees' allotments to the Victory Loan through your company's Payroll Savings Plan offer a final chance to help speed the proud homecoming of our fighting men—and do all in medical power for our hospitalized heroes!

Make December a plantwide TOP-THE-QUOTA drive! Now's the time to spotlight your Payroll Savings Plan—and "brief" your Bond-selling organization for fast, last minute action!

Resolicit every employee to buy the New F.D.R. Memorial $200 Bond

The new Franklin Delano Roosevelt $200 Bond—better than actual cash because it earns interest—is a strong building stone toward the secure future of every employee-purchaser!

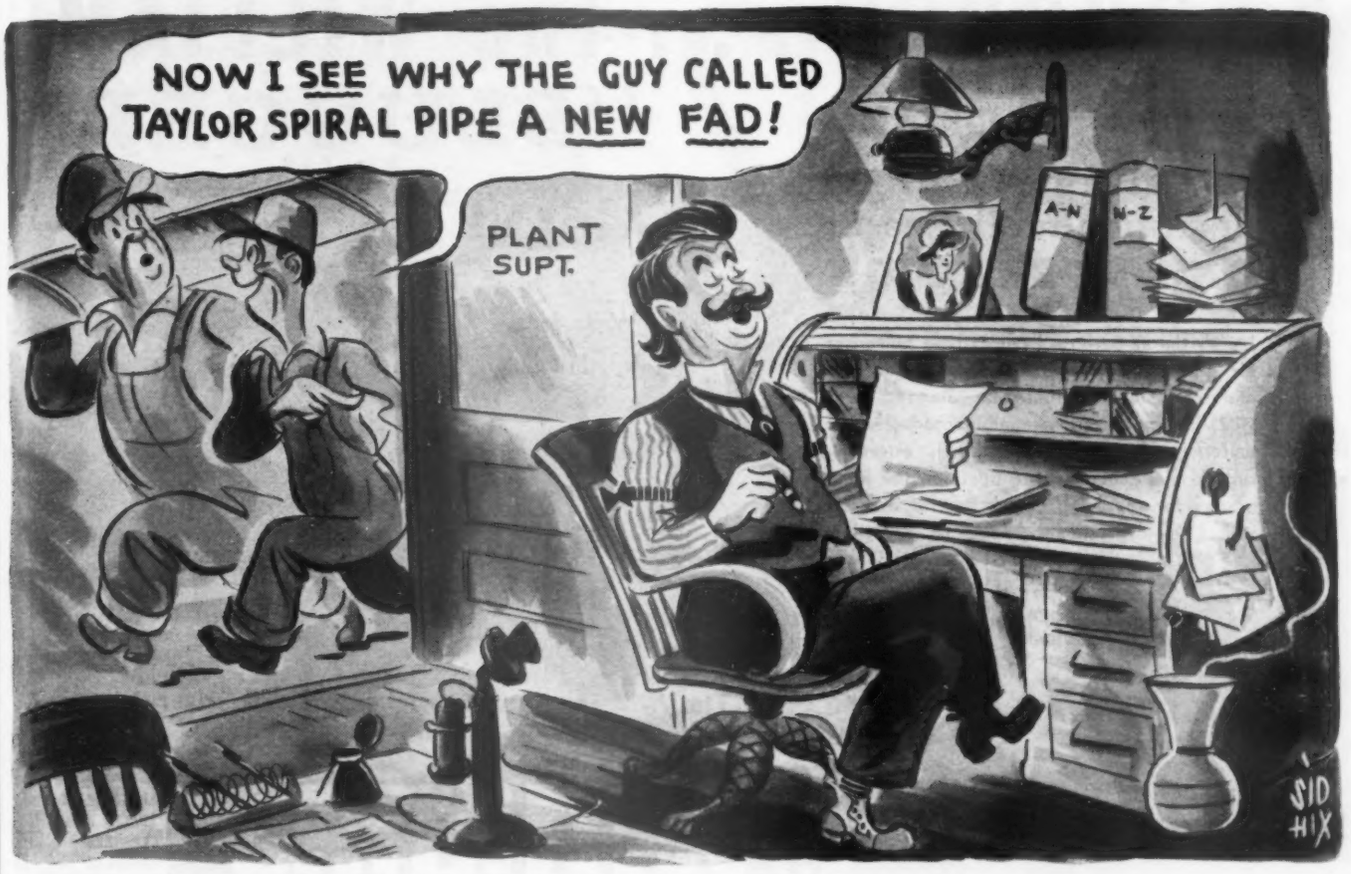
From now 'til the New Year—with plant rallies, interdepartmental contests and resolicitation—keep Payroll Savings Plan Bond-buying at a new Victory Loan high! Buying a Victory Bond is the best way of saying "Welcome Home" to our returning veterans! Also an active aid in assuring prosperity to your nation, your employees—and your own industry!

VICTORY LOAN

The Treasury Department acknowledges with appreciation the publication of this message by

PIT AND QUARRY

This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and War Advertising Council



It's been a new idea for more than forty years—

We don't want to imply that everyone who uses heavy pipe is living in the past. We simply want to drive home the great truth that a lot of heavy pipe is still being used for services that light-but-strong Taylor Spiral Pipe could handle equally well and at much lower cost.

It has been more than 40 years since Taylor Spiral Pipe was actually a new idea. But while it has been fully proved and increasingly used in every one of those 40 years, its full scope and economy is still a new idea in plants that cling to the old practice of using Standard Thickness Pipe for everything that doesn't call for still heavier pipe.

Remember that the light weight of Taylor Spiral doesn't mean it is a light-duty pipe. Its spiral seam gives it a remarkable strength-to-weight ratio . . . makes it stronger, gauge for gauge, than any other type of pipe . . . enables it to handle the wide range of every-day services like those listed below, with strength and service life to spare.

But the light weight *does* mean economy—in first cost, transportation cost, handling cost, erection cost. In fact, the installed cost of Taylor Spiral Pipe in many cases is scarcely half that of the heavy pipe it so well replaces.

Yes, it will pay you to get away from the heavy-pipe habit. Switching to Taylor Spiral Pipe is made practical by the range of sizes and variety of fittings. Thicknesses range from 12 to 6 gauge; sizes from 6″ to 42″; joint lengths up to 40 ft. All types of end joints and couplings, all kinds of fittings and specials or fabricated assemblies, are produced by Taylor Forge, assuring a complete service and undivided responsibility.

TAYLOR FORGE & PIPE WORKS

General Offices & Works: Chicago, P. O. Box 485 ★ New York Office: 50 Church St. ★ Philadelphia Office: Broad Street Station Bldg.

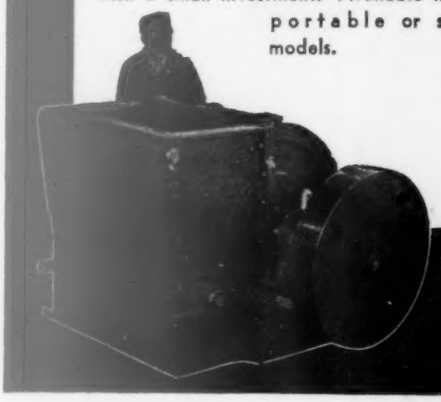
CHANGE TO TAYLOR SPIRAL PIPE FOR:

- High and Low Pressure Water Lines
- Low Pressure Steam and Air Lines
- Steam and Diesel Exhaust Lines
- Vacuum and Suction Lines
- Blower Piping
- Sand and Gravel Lines
- Industrial Gas Lines
- Oil and Gas Gathering Lines
- Swing Pipe
- Spray Pond Piping
- Hydraulic Mining
- Dredge Lines

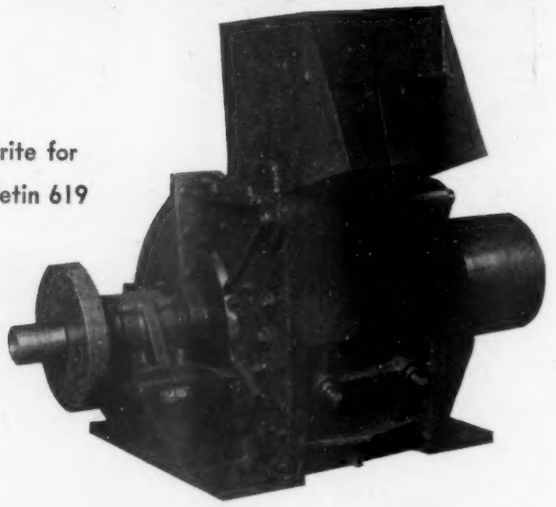
1 CRUSHER . . . the WILLIAMS "SLUGGER"

reduces **"ONE-MAN"** size stone to 1¼", ¾" or agricultural size in **ONE OPERATION**

Here's the all-purpose hammer type pulverizer for crushing agricultural limestone, concrete and road stone. WILLIAMS "Slugger" provides continuous, high-capacity production of uniformly sized material. Unit is extremely rugged and economical to operate. The ideal crusher for supplying a wide market demand with a small investment. Available in 7 sizes, portable or stationary models.



Write for Bulletin 619



The Williams Patent Crusher and Pulverizer Co.
802 St. Louis Ave. St. Louis 6, Mo.

Williams
OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD
PATENT CRUSHERS GRINDERS SHREDDERS

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NEW GUARANTEED
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RUBBER PRODUCTS
available from Stock
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CONVEYOR and ELEVATOR BELTING
all widths and plys

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all widths and plys

V-BELTS
all sizes

HOSE all sizes
WATER
AIR
STEAM SUCTION
FUEL

write for catalog

. . . and everything rubber for Industrial Requirements

FOR DETAILED LISTINGS SEE THE CARLYLE AD ON PAGE 185

THE MODERN WAY ••• of sizing Sand and Gravel
FAST
ACCURATE
ECONOMICAL

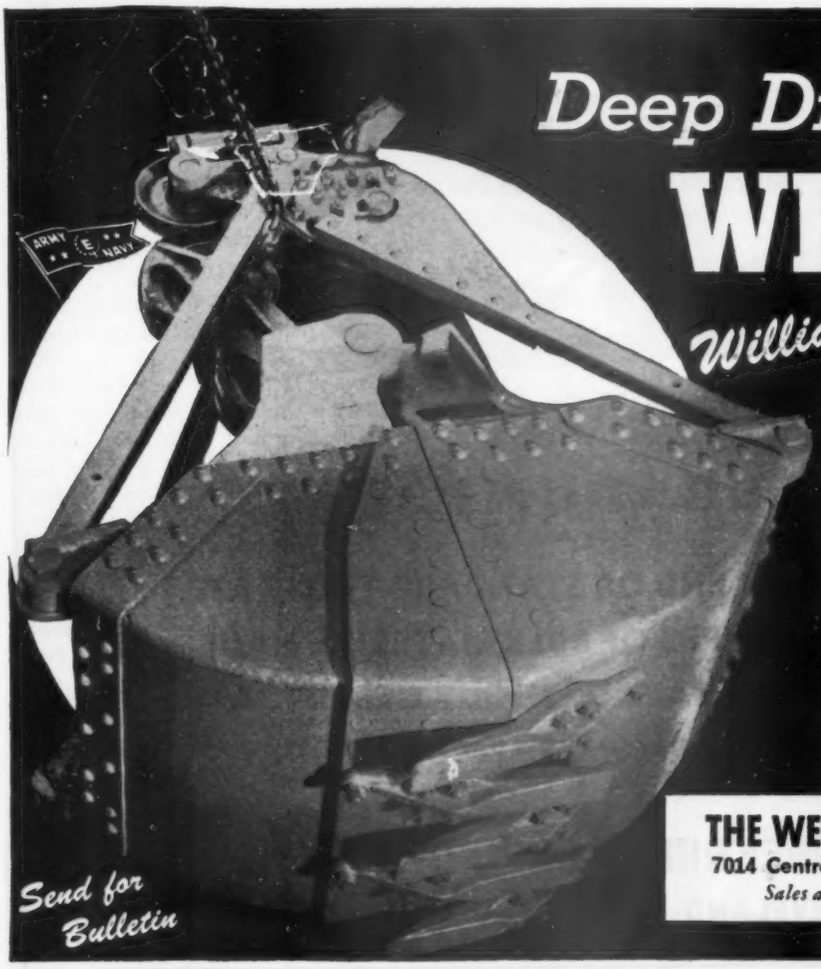
SIMPLICITY SCREENS

SIMPLICITY Screen coarse sizing gravel at the Humboldt, Iowa, plant of Concrete Materials Corp.

YOU'VE GOT TO BE GOOD THESE DAYS to meet increased aggregate production schedules . . . and facing serious machine and labor shortages. SIMPLICITY is helping operators to fill the breach by providing dependable screens that insure continuous service, low-cost output of uniformly sized materials, and minimum upkeep expense.

Write for Bulletin

SIMPLICITY ENGINEERING CO., DURAND, MICHIGAN



Deep Digging . . .

WELLMAN

Williams **Buckets**

Wellman Buckets, in Power Arm and Multiple Rope Types develop great digging power. They bite into frozen ground, hard clay or shale, and come up with full loads. WELDED ROLLED STEEL CONSTRUCTION FOR GREATER STRENGTH AND LONGER LIFE now featured in all Wellman-Williams Clamshell and Dragline Buckets—⅜ to 16½ yd. capacities.

Send for Bulletin

THE WELLMAN ENGINEERING CO.
7014 Central Avenue • Cleveland 4, Ohio
Sales and Service Agencies in Principal Cities

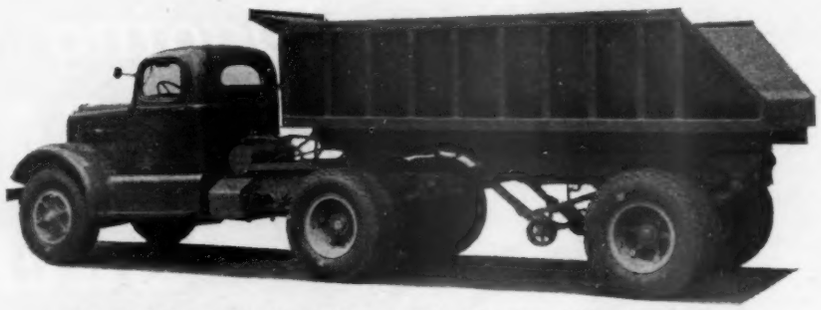
A name to remember when buying a Shovel, Dragline or Crane

LIMA

The LIMA PAYMASTER has established records of big production and low operating and maintenance cost on every conceivable kind of work suited to a shovel, crane or dragline of 3/4 yard capacity. Its modern design with proved and practical features assures big output with maximum economy and efficiency. See a LIMA PAYMASTER in action and make your own comparison. You will be convinced that it is the biggest little machine on the market. Bulletins are available, write today for a copy.

LIMA LOCOMOTIVE WORKS INCORPORATED

Shovel and Crane Division LIMA, OHIO



Model 5SF Semi-Trailer with 10 Cu. Yd. Rock Body

SEMI-TRAILER DUMP UNITS

WITH ROCK TYPE OPEN END OR STANDARD TAIL-GATE TYPE BODIES FOR ALL TYPES OF BULK MATERIAL HAULING NOW AVAILABLE FOR SALE WITHOUT CERTIFICATE

COMPLETE INFORMATION FURNISHED ON REQUEST

TRUCK ENGINEERING CORPORATION

CLEVELAND 2, OHIO

NEW LEADER Truck Body Type

LIME SPREADERS

Can Now Be Purchased Without Triple AAA Certificates or Priority

THE above picture shows a rear view of the new model NEW LEADER marl and lime spreader. This spreader is equipped with an extra wide conveyor and two distributor discs and is strictly a one-man spreader. You will be able to haul wet lime or marl and, due to the large opening in the back end of the spreader, material will always feed onto the distributor disc evenly.

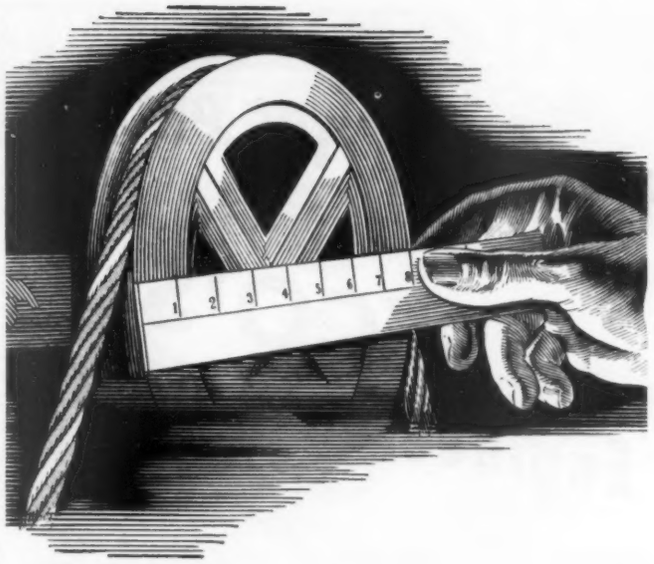
This spreader has many outstanding features. Both gear boxes driving the distributor discs are equipped with cut steel gears and ball-bearings running in a dust-proof and oil-tight gear case. The large gear box driving the wide chain conveyor is equipped with a steel ring gear and pinion and a thrust bearing also running in a dust-proof and oil-tight gear case. Bearing hangers are placed underneath the distributor discs; these are also equipped with ball bearings. This helps to carry the weight of the distributor discs and the load, the weight not being suspended from the gears in the small gear box. With this arrangement you are assured longer lived gears. The framework of the spreader is of hardwood.

These spreaders can now be purchased without priority or certificates of any kind. Write us for any additional information, also prices.

HIGHWAY EQUIPMENT COMPANY, INC.

Manufacturers of the World's Most Complete Line of Spreaders, Including Lime Spreaders, Sand and Cinder Spreaders, Chip Rock, Clay and Dirt Spreaders.

CEDAR RAPIDS, IOWA, U. S. A. Phone 32017-32018



Small Sheaves

call for the flexibility of *PREFORMED* YELLOW STRAND

In a lot of rock-handling equipment, old and new models will have one feature alike: small sheaves—perhaps accompanied by small drums. Either is tough on wire rope. Both should remind you to *minimize* their fatiguing effect by using *Preformed* Yellow Strand.

The *flexibility* of *Preformed* Yellow Strand enables it to hold its own *longer* against fatigue aggravated by severe bending, high speeds and heavy loads. The wires and strands can concentrate on the *external* bending job because *internal* stresses have been virtually neutralized during manufacture.

Along with greater endurance, smooth-running *Preformed* Yellow Strand offers faster installation . . . higher kink-resistance . . . increased safety. Specify *Preformed* Yellow Strand by name—for shovels, draglines, clam shells and other heavy-duty machines.

HAND BOOK FREE: "Industrial Wire Ropes" contains useful facts, tables, pictures. Write for your copy.

Broderick & Bascom Rope Co., St. Louis

Branches: New York, Chicago, Houston, Portland, Seattle
Factories: St. Louis, Seattle, Peoria

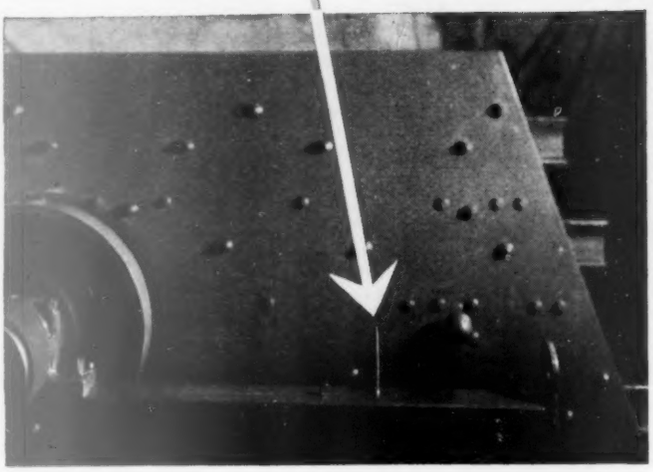
ARMY E NAVY

BRODERICK & BASCOM

Yellow Strand

PREFORMED WIRE ROPE

HERE'S GRAPHIC PROOF! of SECO'S Engineered Balance



All of the Vibration *is in the Screen*

This is an actual untouched photo of a 3½ deck Seco vibrating screen operating at 1050 R.P.M. Note that the pencil and washer standing upright on the base frame are unshaken. The vibration is where it belongs—in the live body. Note also, if you have a magnifying glass, that the little white spots on the side plates show up as true circles, even at the most extreme end of the screen. Thus, not only does Seco keep all the vibration in the live body but also keeps all the vibration under controlled true circular motion. This is engineered balance, the kind of balance that pays off by doing a more thorough job of screening with less attention and less wear and tear on other moving parts. No wonder users everywhere report such impressive performance records with Seco Vibrating Screens.

There is a right Seco for your screening needs. Write Dept. A today.

SECO SCREEN EQUIPMENT CO., INC.
9 Lafayette Avenue, Buffalo 13, N. Y.

HANSON

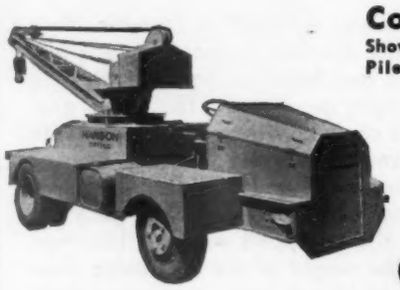
TRUCK SHOVELS...

The records set up with Hansons on tough road building and construction jobs add up to one of the big reasons why so many successful engineers and contractors want Hanson equipment for their post war work. The speed, low operating costs and long life of Hanson Truck-Mounted Shovels and Cranes give you that "edge" which means so much in licking tough competition.

With Hansons you know you're "all set" for the big jobs ahead. Send for full details today.

CAPACITIES
3/8 and 1/2 Cu. Yd. Shovels
4 and 6 Tons Capacity Cranes

Convertible to:
Shovel—Crane—Dragline—
Pile Driver—Clamshell—
Trench Hoe

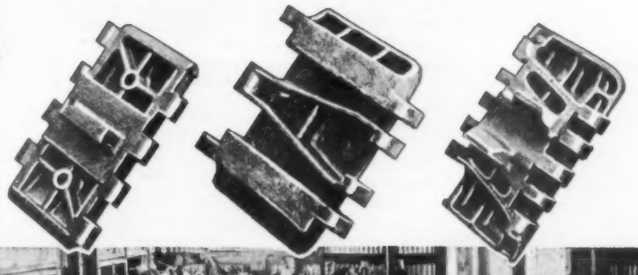


YARD AND DOCK CRANES

Mobile, versatile; one man operation; 2 to 30 miles per hour; 2 to 4 ton lift and carry; full 360 degree swing. A thousand uses in fast, economical material handling. Write for descriptive literature.

THE HANSON CLUTCH & MACHINERY CO.
TIFFIN, OHIO

THOSE BIG BABIES NEED TOUGH SHOES

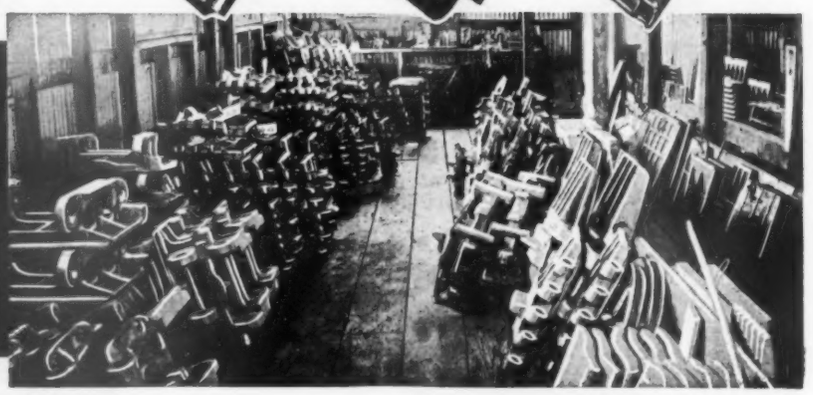


Crawlers for shovels, cranes and draglines, particularly those in hard rock service, deserve good shoes. Our specialty is crawler shoes of improved reinforced design and toughened steel . . . Pads that outwear and outlast . . . reducing idle hours and parts costs . . . substantial savings for you! Large stocks.

ALLOY STEEL & METALS CO.

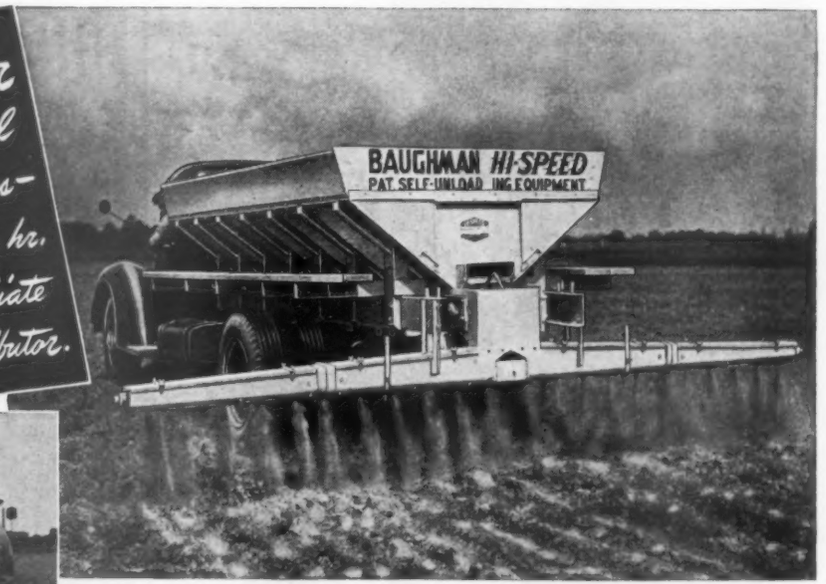
1862 E. 55th St., Los Angeles, Calif.

Manufacturers of TRACK SHOES, CRUSHER JAWS and other WEARING PARTS • PACIFIC JAW CRUSHERS • SLUSHING SCRAPERS • SHEAVE BLOCKS • PACIFIC ROCK BIT GRINDERS • HAND WINCHES • DRILL ROD Service



Reinforced • Better Steel

Make $7.50 to $15 an hour with the new Hi-Speed Special Attachment for Model K Machines— spreading phosphate at 15 miles per hr. for $1.00 to $2.00 per acre. Immediate Delivery. See our nearest distributor.



Patented and Patents Pending

Width of Spread
16½ feet

All-Steel
Welded Construction

Ball and Roller
Bearings throughout

Other Baughman "Hi-Speed" Equipment

Model K, Wide Chain Type Lime Spreader
Model C, Cinder and Chip Spreader
Model N, Dump Body Lime Spreader
Model F, Flat Bed Type Spreader
Model P, Phosphate Spreader (Wheel Type)
Phosphate Spreader Attachment for Model K
Motor or Farm Tractor Drive Spreader
Model J, Transfer Unloader or Dump
Model L, Car Unloader
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Ask for recommendations—we have a reliable distributor near you.

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Factories • JERSEYVILLE, ILLINOIS

HONAN-CRANE MEN Are Trained Oil Purification Engineers

Honan-Crane oil purification equipment is sold ONLY by trained Oil Purification Engineers—skilled technicians capable of making an intelligent analysis of any problem involving dirty or contaminated oil. These men are also capable of supervising proper installation of Honan-Crane equipment to give you maximum oil purification protection against acids, sludges, abrasives or other damaging contamination.

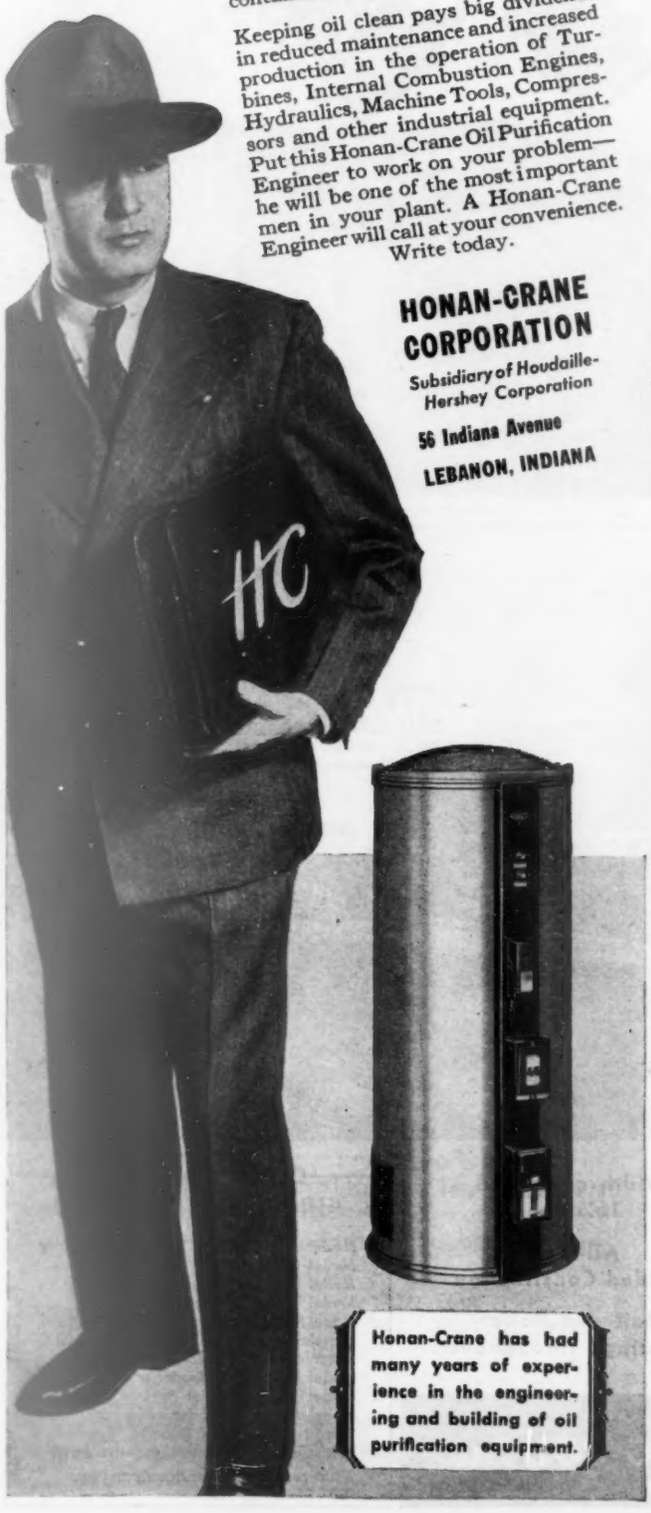
Keeping oil clean pays big dividends in reduced maintenance and increased production in the operation of Turbines, Internal Combustion Engines, Hydraulics, Machine Tools, Compressors and other industrial equipment. Put this Honan-Crane Oil Purification Engineer to work on your problem—he will be one of the most important men in your plant. A Honan-Crane Engineer will call at your convenience. Write today.

HONAN-CRANE CORPORATION

Subsidiary of Houdaille-Hershey Corporation

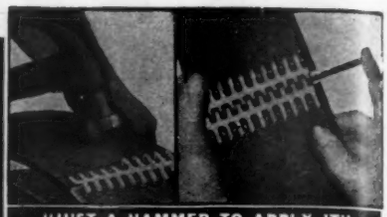
56 Indiana Avenue

LEBANON, INDIANA



Honan-Crane has had many years of experience in the engineering and building of oil purification equipment.

BELT LACING and FASTENERS for transmission and conveyor belts



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ALLIGATOR

Trade Mark Reg. U. S. Pat. Office

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World famed in general service for strength and long life. A flexible steel-hinged joint, smooth on both sides. 12 sizes. Made in steel, "Monel Metal" and non-magnetic alloys. Long lengths supplied if needed. Bulletin A-60 gives complete details.

FLEXCO HD

BELT FASTENERS AND RIP PLATES

For conveyor and elevator belts of all thicknesses, makes a tight butt joint of great strength and durability. Compresses belt ends between toothed cupped plates. Templates and FLEXCO Clips speed application. 6 sizes. Made in steel, "Monel Metal", non-magnetic and abrasion resisting alloys.

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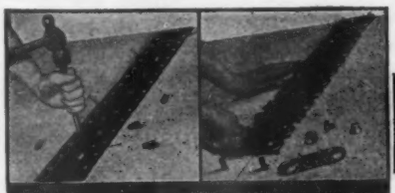
Sold by supply houses everywhere



"CONVEYOR BELTS EASILY FASTENED"

FLEXIBLE STEEL LACING CO.

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DIRECT YOUR *Inquiries* TO CALWICO

Whenever you are in need of a woven wire screen of any specification, always direct your inquiry to Calwico. We weave screens of all available metals, from fine, hairlike threads, up to rods ½" in diameter. We normally carry thousands of standard specifications in warehouse stock, and can weave "specials" on short order. The California Wire Cloth Corporation, 1001 22d Avenue, Oakland, California

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SINCE 1916

Low Cost Per Ton-Mile • Manganese Tracks • Contour-following Traction
Sturdy Construction
5 to 50 Tons Capacity
Negotiates Steep Grades, Mud, Snow and Ice

For
Mining • Quarrying • Logging • Snow Plowing • Dam, Highway, Airport and Oil Field Work

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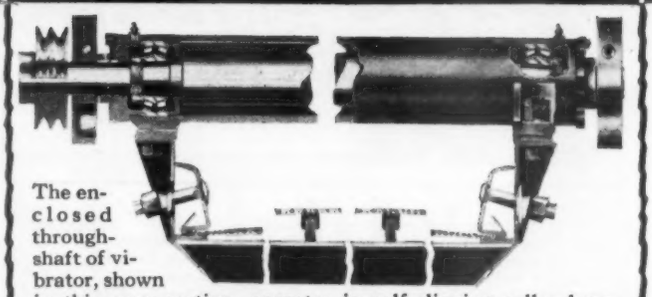
Designers and Builders of OFF-THE-HIGHWAY Vehicles

Here's the "Power" IN LINK-BELT VIBRATING SCREENS
which assures long life and efficient operation



The enclosed through-shaft of vibrator, shown in this cross-section, operates in self-aligning roller bearings and can be driven from any common source of power. The central portion of shaft is machined eccentrically to provide an initial unbalanced effect; adjustment in the intensity of vibrations may be obtained to suit conditions, by re-setting the adjustable unbalancing wheels on each end of the shaft. By means of these unbalancing wheels, the total movement or amplitude of vibration of the screen can be adjusted to suit changes in the size of openings or in condition of material screened.

Made in a number of standard sizes—single or multiple decks, with or without enclosures. Send for Book 1762. 10,081

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on the job for any need—
ANYWHERE!

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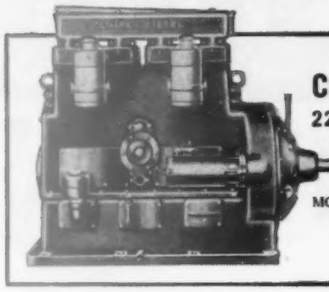
FOR MECHANICAL DRIVES

or Direct Connected to Generator in Climax 15 and 30 kva Generating Sets



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22 and 44 maximum h. p.
(at 1200 rpm)
2 and 4-cylinder

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MAXIMUM RATING 44 H.P.

HERE IS more power—*more dependable, low cost power*—for stationary or portable industrial or marine service than is commonly available in a small, space-saving package. Climax Diesels are strongly built with one piece construction of cylinders and crankcase. They are 4-stroke-cycle type, solid injection, compression ignition engines that start instantly and operate smoothly on cheap, standard grade fuel oil. Standard equipment includes American Bosch fuel pump and injection nozzles, positive lubrication, cooling and electric starting equipment. For complete information and specification bulletin, write Climax Engineering Company, Clinton, Iowa.

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Builder of Climax BLUE STREAK ENGINES and GENERATING SETS
CLIMAX ENGINEERING COMPANY

It Scoops
It Hoists
It Loads
That's the TRUK-LODER for quick jobs

Fast as 15 or 20 shovelers — Loads a truck in 2 to 3 minutes
Fits on any type of truck

GENERAL UTILITY LOADING DEVICE

TRUK-LODER is especially recommended for contractors and communities. It's the working equal of a large and costly shovel in loading gravel, crushed stone, etc. For those requiring a shovel for short intervals, it can be detached quickly by removing two hinge pins and the truck put back into regular hauling service.

Territory open for responsible distributors
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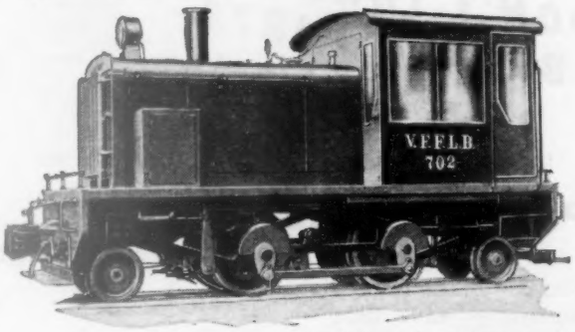
INDIVIDUALIZED HAULAGE UNITS



Leading and trailing trucks permit adequate speeds with SAFETY where track is uneven.

Versatile Davenport Better-Built Locomotives are available in a wide range of types and sizes INDIVIDUALIZED to particular requirements. For BEST results in long service and LOWEST TON-MILE COSTS your locomotive should FIT your operating conditions.

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DAVENPORT LOCOMOTIVE WORKS
A DIVISION OF DAVENPORT BESLER CORPORATION, DAVENPORT, IOWA

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AND MORE BITES PER DAY

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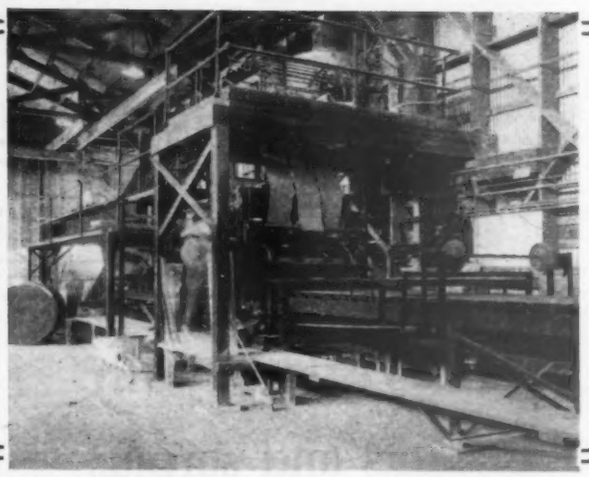
EHRSAM Equipment
Preferred for Producing
GYPSUM Wallboard



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EHRSAM modern design machines provide for all phases of material handling and processing operations. Write for engineering information.

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. . . is the chief reliance of leading sand, gravel, and crushed stone producers, who agree: "We can work the pits faster and cheaper with COLUMBUS units!

CALL COLUMBUS for profitable recommendations about elevating, conveying, washing, dewatering and transmission machinery.

We make practically everything in this line from a single bucket to a complete plant.

COLUMBUS Elevator in stone quarry.

Write for Bulletin No. 155

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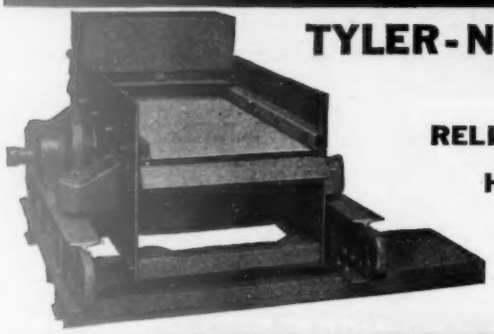
Some territory open for responsible distributors

From the SMALLEST to the LARGEST TONNAGES



2' x 4' Type 100 Tyler-Niagara Screen

TYLER-NIAGARA SCREENS

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RELIABLE

HIGH CAPACITY

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6' x 14' Type 900 Tyler-Niagara Screen

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GOOD FOR ROUND TRIPS

RELIANCE

TO THE JOB AND BACK

NOW you can reach profitable jobs for miles around with the speedy Reliance portable rock crushing plant. It includes crusher, elevator, chute screen, engine and drive, complete and ready for action.

Compact unit is mounted on a four-wheel truck, steel or pneumatic tires. Low feed opening. V-belt drive. Engine fitted with clutch for easy starting.

RELIANCE Products include: Rock Crushers, Bucket Elevators, Revolving Screens, Street Sweepers, Storage Bins, Chip Spreaders, Belt Conveyors, Feeders, Separators, and other equipment.

PORTABLE CRUSHING PLANT

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CRUSHED STONE RECORDS point to

The EAGLE Jaw Crusher

EAGLES are durable and rugged. Reversible jaws and cheek plates.

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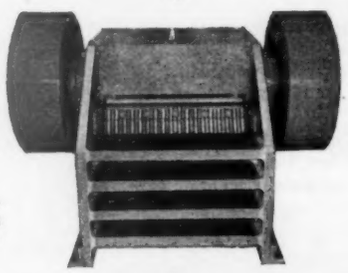
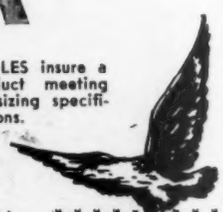


EAGLES are available in capacities up to 1500 tons per day.

EAGLES show large economies in power needs and upkeep.

EAGLES insure a product meeting all sizing specifications.



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Half-Century of Dependability

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Advertise your wants and surplus equipment in

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ALL METALS ALL WEAVES

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Also Racks, Ratchets, Pawls, Couplings, Electric Hoists, LimiTorque Valve Operators.

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We have a complete line of speed reducers of all types in a wide range of ratios and horsepowers for straight line, right angle or vertical drives.

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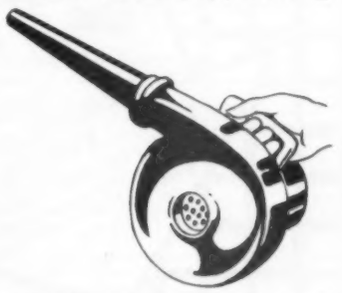
5 DAYS FREE BLOWING

TO PROVE
the NEW 1 H.P.

ACE
Portable Electric
BLOWER
Will Save Time, Labor and Money



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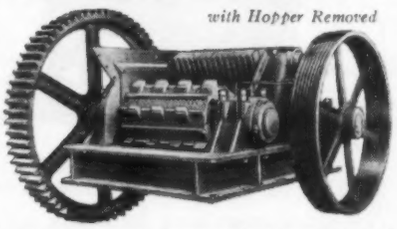
McLANAHAN *All Steel* ROCKMASTER CRUSHERS

with Hopper Removed



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RUGGED - SIMPLE Construction. LOWEST in FIRST cost and MAINTENANCE cost.

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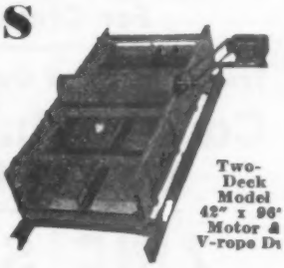

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FAST, ECONOMICAL ERECTION

The sand and gravel or cement storage bins you erect should be N & F super-concrete stave bins—fast erection—can be moved to different locations — are economical and guaranteed. Any size or capacity or suitable type conveyor.

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Conveyor, Elevator, Compensated, Transmission, Agricultural and V-Belts. Belting for every Service.

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Air, Acid, Contractors, Fire, Hydraulic, Oil and Gasoline, Steam, Sand Blast, Suction, Water, Spray and Special Hose. 81 Kinds for 81 Uses.

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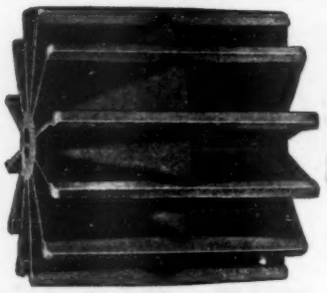
that the Belt-Saver Pulley saves money and rubber and prevents accidents on their belt conveyors and bucket elevators.



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SQUARE
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HEXAGON
PERFORATED PLATE
of every description
for maximum productiveness from your vibrating screens.
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CONTRACTORS

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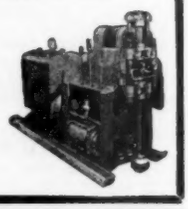

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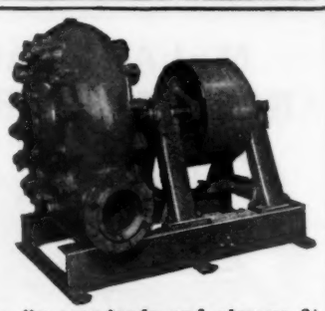
The Lightning
Sand and Gravel Pumps
HEAVY-DUTY
(Ball-Bearing)
and Low Head Types



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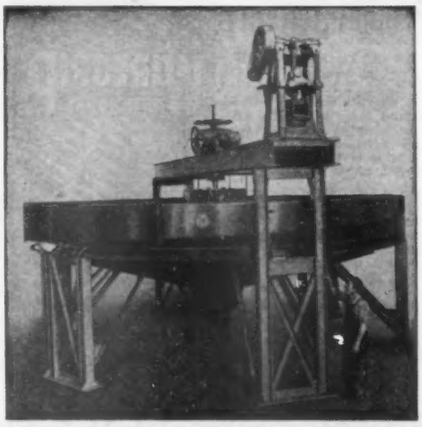

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The Denver Hydroclassifier is designed for fine sizing and de-sliming problems where it is essential to reduce materials to sizes minus 200 mesh to 10 microns. Enclosed integral lift vertical worm gear drive makes it easy to raise rakes. The spiral rakes convey material to center cone in one revolution. Ask us how these machines will save you money. Write for new bulletin No. C4A-B.

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☒ VOTE **"YES"**
For this dependable, non-crystallizing, long-wearing Screen Cloth with "Nat-Aloy" Lock Crimp Meshes.
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STERLING BABBITT
For Crusher Bearings

Bronze Inner and Outer Eccentric Bushings

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WANTED

Concrete Pipe Machine
Mail specifications and quotations to

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WANTED

Hand operated crane on runway, about 4 tons capacity, about 20 ft. span, 20-22 ft. ground to hook.

P. O. Box 246, Waltham, Mass.

WANTED TO PURCHASE

24 x 36" jaw crusher, good operating condition. Price must be reasonable for resale.

R. H. MINER CO., LTD.
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WANTED

One Steel bin, 200 to 400 ton capacity for concrete batch plant. Also one bulldozer attachment for Caterpillar Thirty Tractor.

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E. T. BURNSIDE
Shelbyville, Indiana

WANTED CONSTRUCTION ENGINEER

for job with well established firm.

Address Box No. 1113, Pit and Quarry Publications
538 So. Clark St., Chicago 5, Illinois

POSITION WANTED

As plant superintendent. Ten years' engineering experience and 18 years of operation and construction of cement plants (wet process).

Box No. 1109, c/o Pit & Quarry Publications
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WANTED

Experienced hard rock quarry superintendent to operate modern well-equipped plant in Middle West. Attractive proposition for right party.

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Middle West Portland Cement Manufacturer wants aggressive young engineer with experience in plant lay-out, construction and operation. Permanent position with excellent possibilities for right man. Address reply to

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PROSPECTING, SAMPLING
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ANYWHERE
We look into the earth
PENNSYLVANIA
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Diamond Core Drilling

For All Minerals

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Phone 1828

Operation
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Appraisals

WANTED

A 24" x 36" jaw crusher, with or without an apron feeder.

STRASBURG LIME COMPANY
STRASBURG, VIRGINIA

WANTED

1 single tube unit, 100 pound weighing and bagging machine; min. capacity 80 bag per hour. State condition, make, price.

200 elevator buckets, 10" x 7" in good condition for rubber belt.

1—5'-6' conical dust collector.

1—5000—6000 cu. ft. Norblo Dust Collector or its equal.

SOUTH RIVER SAND CO., Old Bridge, N. J.

WANTED

Experienced concrete pipe plant manager, familiar with Universal Machine. Also machine operator (Universal).

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EASTERN CONCRETE PIPE CORP.
98 Lyon St. Tel.: 6-0992 New Haven, Connecticut

DUMP WAGONS

3 — only, LA PLANT-CHOATE Model DW 14, 10-cu. yd. Rock Wagons. Hydraulic side dump. Units mounted on Athey Tracks, 24" face. Like new. F.O.B. Lexington, Nebraska.

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948 Bryant Street San Francisco 3, California

WANTED

Experienced sand and gravel plant superintendent. Excellent working conditions. Good opportunity to right party.

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538 S. Clark St. Chicago 5, Ill.

WANTED
PLANT SUPERINTENDENT

Familiar with pipe, block or any special concrete product. Must have at least high school education, be mechanically inclined and have pleasing personality. Age limit 48. Postwar opportunity with large concern branching out into full line of products in various sections of the United States and operating on an incentive profit sharing plan. Past record must stand rigid inspection. Include photograph in reply. Address Box 709, care of

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CONVEYOR WANTED

Troughing belt conveyor, 18 to 24 in. wide, 75 to 100 ft. long. Kindly send price and description to:

PLIBRICO JOINTLESS FIREBRICK CO.
1800 Kingsbury St., Chicago 14, Ill.

WANTED TO BUY

Good, modern roller bearing jaw crusher, 24x36 or larger, in which case we will have:

FOR SALE

18x36 roller bearing Universal jaw crusher, first class condition.

COOGAN GRAVEL COMPANY
Peoria, Illinois

WANTED

18 2-yard Granby type steel dump cars for 36" gauge.

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Chief Chemist, twenty years experience in Portland Cement Industry, wishes to locate on west-coast in modern cement company or partnership in research laboratory.

Box No. 1111, c/o Pit and Quarry Publications
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WANTED

One 3 yard Monighan walker crane, Deisel engine, with 70 foot boom.

FOR SALE

One Model 6, 1½ yard Northwest, Combination Shovel, Dragline and Crane. 7¾ x 9 Twin City gasoline engine. 24" cats. Clamshell and Dragline buckets.

One 1940, Allis-Chalmers, HD-7 Diesel Tractor, with Baker Hydraulic Bulldozer.

One Model 401 Koehring Shovel Front.

One ¾ yard General Shovel Front.

½ to 1½ yard clamshell buckets.

1½ yard dragline buckets.

F. W. HERKEL CONSTRUCTION COMPANY
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GOOD USED EQUIPMENT — QUICK SHIPMENT

TRUCK CRANE

1—18 ton Truck Crane, mounted on 8-14:00 x 20 pneumatic tires, Model 255-A, P. & H., equipped with Waukesha Type MZR gasoline engine, 55' steel boom, hydraulic controls. Lifting capacity 18 tons. Manufactured by Harnischfeger Corp., new in 1941. USED FOUR MONTHS ON ONE JOB. With this Crane we can also include a crawler mounting with which this crane was originally furnished.

SHOVEL

1—1 yd. P. & H. Model 600-A Shovel, gasoline, fitted with new crawler treads.

RAYMOND PULVERIZERS

2—4 roll Raymond High Side Pulverizers, each equipped with air classifier, one of the "whizzer" type; Raymond exhauster, cyclone collector and inter-connecting piping. For products as fine as 99.9%—325 mesh, with coarser adjustments.
2—#0 Beater type—equipped as above—but including automatic throw-out attachments and motors.
5—No's. 3, 1, 00 and 0000—Beater types.
2—No. 70 "Imp" Coal Pulverizers; also #45, #55 and two Bowl Mills.

BRIQUETTE PRESS

1—Komarek-Greaves, two rolls, 32" dia., x 24" face, with extra shafts and rolls. Rated on coal—25 t.p.h.

CRUSHING ROLLS

1—24"x40" Penna. Crusher Co. Single Roll, also 24"x24" Jeffrey, 24"x28" Mead-Morrison, 36"x60" Fairmount—all single roll.
2—36"x16" Allis-Chalmers Type "B" double roll, also 24"x14", 42"x16" and 54"x20" A-C.

DIRECT HEAT ROTARY DRYERS

2—4'x30' American Process, ⅜" shells, excellent condition. Now at Anniston, Ala. and must be removed and shipped quickly. Priced accordingly.
1—5'x30' Cummer, mounted on I-beam frame, with furnace, etc.
2—6'x30' Ruggles-Coles, ⅜" shells, for single or double shell operation.

JAW CRUSHERS

1—9"x15" Allis-Chalmers, Blake type.
1—18"x36" Farrel-Bacon, Type B.
2—24"x36" Traylor, Type A.
1—30"x42" Farrel-Bacon, Type B.
1—22"x50" Champion.
1—36"x54" Buchanan.

HARDINGE CONICAL MILLS

4—6'x22", 6'x36" and two 8'x30" Pebble Mills, all silex lined, continuous.
1—5'x22" Ball Mill, iron lined.
1—6'x12' Rod Mill, straight side, iron lined.

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5—30", 5', 6', 8' and 14' dia.
1—14' dia. Sturtevant.
1—Model BX-100 Sutton, Steel & Steel Table.

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1—Battery of two 3'x5' Tyler Hummers, Type #31, TRIPLE DECK, with gen. set.
1—Battery two Tylers, #33, single deck.
3—Tyler 4'x5', #37, single deck.

FOR 33 YEARS A SYMBOL OF CONFIDENCE

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17-19 PARK ROW NEW YORK, N. Y.
Shops and Yard at Newark, N. J., cover eight acres.

WANTED—PACKHOUSE FOREMAN

Cement plant in Michigan desires services of a man capable of taking charge of Packhouse.

Give full details in reply.

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WANTED

One Single Roll Crusher
McLanahan P 7, 8 or 9
or equivalent.
One Hammer Mill Dixie 3040
or equivalent.
Two Steel Bins 15x25'
or equivalent.
One 200' ctoc Belt Conveyor 36" wide
One 100' ctoc Belt Conveyor 24" wide
One 250' ctoc Belt Conveyor 18" wide
with or without Belting.

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THE BLACK WHITE LIME CO.
P. O. Box 87 QUINCY, ILL.

Jaw Crushers—4"x8" up to 18"x36".
Crushing Rolls—16"x10" up to 54"x24".
Gyratory Crushers—No. 3, No. 12.
Ring Roll Mills—No. 0, No. 1, and No. 2.
Swing Hammer Mills.
Rotary Fine Crushers—Nos. 0, 1, 1½ and 2.
Direct Heat Rotary Dryers—3½'x25', 4'x30', 5½'x40', 6'x50', 7'x50'.
Semi-indirect heat Dryers—70"x35', 60"x30'.
Cement Kilns—3' up to 11' diameter.
Hardinge, Marcy & Fuller-Lehigh Mills.
Raymond Mills—Nos. 00, 0, 1, 4 & 5 Roll.
Tube—Rod and Ball Mills—3' to 6' diameter.
Vibrating Screens—Air Separators.
Lime hydrating plant.
New Dryers built for all purposes.

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Five Ton Industrial low lift Truck gasoline or storage battery 108" table.

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FOR SALE

1—12 cu. yd. Austin Western Hydraulic Scraper
1—10 ton 3-wheel Roller

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Goshen, Indiana

FOR SALE

New Commercial S.&S. Co.'s Steel Pallets.
500—12" x 15¾" 3 core code name GRANITE.
50—12" x 15¾" 3 core code name GROAT.
50—12" x 15¾" 3 core code name GRANGE.

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25 or 30 cubic ft. batch mixer with skip loader. Advise price, location, condition and make.

Box No. 1107, c/o Pit and Quarry Publications
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FAIRBANKS-MORSE
Diesel Generator Unit
120 H.P. Heavy Duty 90 KVA
3/60/240 Complete

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(1) 25 Ton Browning Steam Locomotive Crane with 8 wheels, 42 ft. boom, bucket drums. Reconditioned in 1943. Hartford Inspection in 1945. Very good Buy.

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Diesel Engine

1—14x17 four cylinder Fairbanks-Morse Diesel Engine with 170 KW 2300 Volts 60 Cycle 3 phase generator. Price $2600.

Naranja Rock Company
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SHASTA DAM SAND AND GRAVEL PLANT EQUIPMENT

Including—GOODYEAR 9-MILE-HAUL 36" SPECIAL CONVEYOR BELTING, 32,000' of Belt remaining, with Idlers, Pulleys, and drives.

ALSO—

Electric Motors, Line Equipment, Transformers, and Supplies; Pendulum Boom Belt Conveyors, 100' and 200'; Merrick Feedoweights and Weightometers; Dorr Hydroseparator, 20'x4'; Marcy Rod Mill, 8'x12'; Vibrating Screens; Dorr Rake and Bowl Classifiers; Extra-heavy Gravel Washer, Trommel type; Pumps: Centrifugal, Deep-well, Steam, Dredge. Auxiliary Equipment: Chain Hoists, Winches, Welding Machines, etc.

Subject to Prior Sale

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Established in 1904. Complete in every way. Latest and best equipment for manufacturing concrete culvert pipe, block, drain tile, well curbing, etc. Ten acres of plant site; we own our own gravel tract and washing plant; good location; business well established; wonderful opportunity. Write for descriptive circular.

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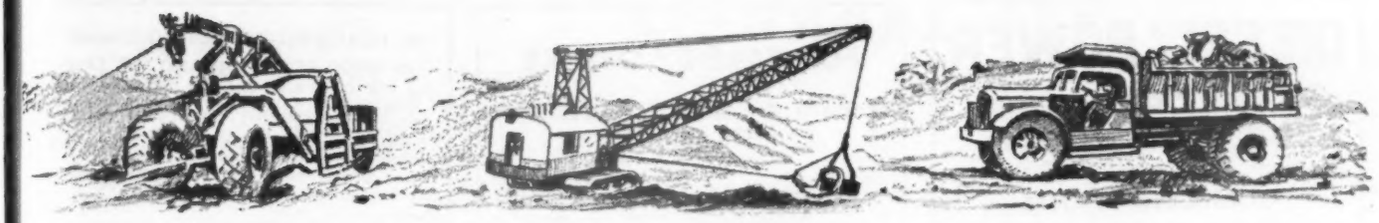

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Take advantage of the opportunity NOW offered to cover your new job—or to bid a proposed job—with positive assurance that you can get all heavy equipment for digging and hauling, from ECONOMY COMPANY on a "Pay-As-You-Go" basis.

Look over our lists of Power Shovels, Draglines, Trucks, Tractors (wheel or crawler), Trailers, and Wheeled Scrapers—anything and everything that you may need in the pit and quarry industries.

A selection of shovels and tractors, anyone of which can be leased and purchased on a "Pay-As-You-Go" basis.

We suggest that you phone us (collect) and we will explain our plan to you and give you any further information that you might require.

WIRE OR PHONE US WHAT YOU NEED, TO-DAY

4-5 yd. Bucyrus-Erie 120B Electric Shovel. Serial up in 10000s. Manganese steel dipper. Ward-Leonard Controls. Condition real good.

4 yd. Bucyrus-Erie Model 100B Shovel and Dragline combination. 90' Boom. Two dragline buckets.

3 yd. Diesel Marion Model 40A. Entirely rebuilt in 1945. 3 yd. dragline bucket.

3 yd. Bucyrus-Erie 52B Dragline. 80' Boom.

2½ yd. Diesel Northwest Model 80D Dragline. 80' Boom. Built in 1939. Brand new Murphy Diesel Engine installed 1944. Machine rebuilt in 1945.

2½ yd. Northwest 80 Shovel and Dragline combination. Gas powered. Entirely rebuilt.

2 yd. Diesel Koehring Model 801 shovel and dragline combination. Rebuilt.

2 yd. Northwest Model 8 dragline. 90' Boom. Serial number in 4000s.

2 yd. Northwest Model 70 shovel and dragline combination. 60' boom.

1¾ yd. Marion 471 Diesel Electric shovel and dragline combination. 60' Boom.

2½ yd. dragline bucket.

1¾ yd. shovel attachment. Entirely rebuilt.

1¾ yd. Diesel Lima Model 602 shovel.

1¾ yd. Diesel Bucyrus-Erie shovel. 2¼ yd. dragline bucket. 80' Boom. Buda Diesel Engine.

1¾ yd. Diesel Koehring Stripping Shovel Model 702. Long boom and long stick.

1¾ yd. Diesel Osgood Model 906. 35' shovel boom. 30' dipper stick.

1¾ yd. Diesel P&H Model 775—extra wide and extra long cats. A real buy!

1½ yd. Diesel Lorain 77 shovel and dragline combination. Serial number in 5100s. Powered by Caterpillar Diesel Engine D11000.

1½ yd. Diesel Northwest 6 shovel and dragline with Caterpillar Diesel Engine. Built in 1941. Excellent condition.

1½ yd. Osgood Diesel "Victor" model stripping shovel. 28' boom. 24' stick. Caterpillar D13000 Diesel Engine.

1½ yd. Northwest Model 6 shovel and dragline combination with 75' dragline boom.

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1¼ yd. Northwest Model 5 shovel and dragline combination. Serial number in 2800s.

¾ yd. Diesel Linkbelt Speeder Model B5. Serial number in 150s. Caterpillar D8800 Diesel Engine.

¾ yd. Marion 331. Serial number up in 6700s. Condition good. A lot of new parts. A real bargain.

¾ yd. 1941 Koehring Model 251 shovel, crane and dragline combination.

¾ yd. 1940 Lorain Model 40 shovel, backhoe and crane combination. Chain Crowd.

¾ yd. Koehring Model 301 shovel and crane combination.

¾ yd. 1938 General shovel. Serial in 1800s.

½ yd. 1942 Insley K-12 shovel and backhoe combination with buckets.

½ yd. P&H Model 150 shovel and dragline combination.

½ yd. Insley Model K-12. Built in 1942. Shovel, crane and dragline combination. Buckets.

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⅜ yd. Bucyrus-Erie Model 10B Shovel.

⅜ yd. Bucyrus-Erie Model 10B shovel, dragline and crane. Bucket.

⅜ yd. Bucyrus-Erie Model 10B shovel, dragline and backhoe. Factory trailer.

⅜ yd. Hanson shovel.

⅜ yd. ¾ swing Bay City "Pup" shovel and backhoe combination.

⅜ yd. Byers Bearcat.

TRACTORS

Late Model 7M Caterpillar Diesel Tractors — two of them have LeTourneau Bulldozers, power units and the serial number of one is in 7M1800s, the other one 7M1600s. Location: North Carolina.

(1) — International TD-14 Diesel Tractor with Bucyrus-Erie Angledozer in good condition. Texas location.

(2) — International TD-18 Tractors — late models—with double drum LeTourneau power control unit.

(1)—TD40 Caterpillar Tractor with Bucyrus-Erie bull-grader, very late model — serial number up in TCC9300s. Texas location.

(1) — TD9 International Tractor with Bucyrus-Erie bull-grader is available in Virginia.

(1) — RD7 tractor — serial number in 9G1700s with power unit and UL Scraper — Southern location.

(3)—RD8 Tractors — serial number in IH2900s — with double drum power unit and YR13 Scrapers — in rather good condition. Available Midwest.

(2) — D4 Caterpillar Tractors with LaPlant-Choate hydraulic bulldozer. Built in 1941 or 1942.

(1) — 1941 Caterpillar D6 Tractor with LeTourneau angledozer — in excellent condition.

A REAL BARGAIN

(1)—Model FD Diesel Cletrac Tractor — in real good operating condition. Serial number in 6600s. Midwestern location.

SPECIAL

1943 (December) Caterpillar D4 Tractor with a LaPlant-Choate hydraulic dozer and Athey Front End Loader Shovel of 1⅛ yd. capacity. A real buy.

Motor Graders: We succeeded in locating four Caterpillar Model 12 Diesel Motor Graders with scarifiers. Condition good. Southern location.

Tournapulls: (3) Tournapulls Super "C" — built the latter part of 1941.

We particularly recommend serious consideration of the following units:

⅜ yd. Linkbelt Speeder Model LS-40 shovel and backhoe combination. Serial number LS-505. Condition good and can be shipped as shovel or as a shovel and backhoe.

1943—½ yd. Osgood crane and dragline with ½ yd. dragline bucket. Location — North Carolina.

1½ yd. Lorain 57B Diesel shovel dragline and crane combination.

2½ yd. Diesel Osgood Model 908 dragline. 85' Boom. Two dragline buckets each 2½ yd. capacity. Power supplied by Buda Diesel Engine Model LD-1742. Serial number of machine is in 3000s. Offered in rebuilt and guaranteed condition. This is a real buy.

1942—Koehring Model 604 — 1½ yd. 30" shoes. Kohler Lighting Plant. 26'6" boom and 16'6" dipper stick—1½ yd. dipper bucket. Clamshell crane and dragline attachments. Powered by Caterpillar Diesel Engine.

1¾ yd. Lima Diesel Model 750. Shovel and dragline combination. In real good condition.

ECONOMY COMPANY, INC.

49 Vanderbilt Ave., New York, N. Y. **Tels. MUrray Hill 4-2294-8292-2295-2296**

DIESEL POWER

45,000 Horsepower

FOR YOUR SELECTION

Modern — Immediate Delivery

COMPLETE PLANTS

10,800 H.P. Busch-Sulzer — 9,000 KVA
6 Units.

1—3—4—6 Engine Generator Plants
Engine Generator Sets

1800 H.P.—1500 KVA Capacity and Smaller Sets

Fairbanks-Morse	Busch-Sulzer
Superior	McIntosh-Seymour
Atlas Imperial	General Motors
Buckeye	De La Vergne
Chicago Pneumatic	Ingersoll Rand
Washington Iron Works	Worthington

ELECTRIC BOAT

PORTABLE POWER UNITS

International-Harvester Caterpillar
Cummins Buda Superior Waukesha
Sheppard Lister Murphy Hercules

IN STOCK — READY FOR SERVICE

Shops and Warehouse, Jersey City N. J.
Specify Your Diesel Power Requirements

A. G. SCHOONMAKER COMPANY
Diesels

50 Church St. Phone Worth 2-0455
New York 7, N. Y.
Business Established 1898

FOR SALE BY OWNER

Modern All Steel Gravel Plant Complete

This plant was built in 1940 and is so constructed that it can be easily dismantled and moved.

Plant consists of 1½ Cu. Yd. Sauerman Slackline, Steel Tiffle, All Steel Bins with Vibrating Screens, Anti-Friction Bearing Crusher and All Electric.

This plant is now in operation and is priced to sell.

For further information write or wire

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IRVING BROS. GRAVEL CO.
R. R. No. 5 Marion, Indiana

THE FOLLOWING SURPLUS EQUIPMENT IS IN GOOD CONDITION AND FOR SALE:

One 9-K Gates Allis Chalmers Crusher No. 5554, Complete with Allis Chalmers TexRope Drive.
A. C. Motor 200 HP, 900 RPM, 3 Phase, 60 Cycle, 440 Volt.
11 E-330 TexRopes 1¼" x 1" x 330" Pitch Length.
Necessary Starting Equipment.

One 11 Groove Sheave 21.6" Dia. Motor Sheave

One 11 Groove Sheave 52" Dia. Face 19¾"

Special Crusher Parts
One Bottom Shell Bushing
One Spider Cap
One Main Shaft (pre war nickle steel)
One Counter Shaft (with 52" Dia. 11 Groove Sheave)
One Counter Shaft Bearing Cap
One Eccentric (with mantle for rebabbiting)
One Spider Bushing
One Bevel Pinion
One Bevel Wheel

Two 10" Newhouse (Allis Chalmers) Crushers, Serial Nos. 8477 and No. 8520, Complete with 150 H.P. 3 Phase, 60 Cycle, 220 Volt, 575 RPM Allis Chalmers Motors.
Necessary Starting Equipment.

Spare Parts for 10" Newhouse
Two Main Shaft Nuts
Two Bottom Shell Bushings
Two New Eccentrics

Three 7" Newhouse (Allis Chalmers) Crushers, Serial Nos. 8524, 8480 and 8687, Complete with Two 100 H.P. 3 Phase, 60 Cycle, 220 Volts, Allis Chalmers Motors.
Necessary Starting Equipment.
One with 60 H.P. 3 Phase, 60 Cycle, 220 Volts Allis Chalmers Motors.

Three New Eccentrics
One Main Shaft Nut
Four Support Springs and Castings
Three Bottom Shell Bushings
One Suspension Nut

BIG ROCK STONE & MATERIAL COMPANY
Ft. of Ashley St., Little Rock, Ark.

FOR SALE

Tyler Hummer Screen, 3'x5' Electric Vibrating, complete with M.G. Set and screw feeder

CRUSHERS

Webb City Jaw 12" x 24"
Gruendler No. 2 Jaw 10" x 14"
Symonds Disc Crusher, size 24, Feed 3½"

Electric Motors Rebuilt and Guaranteed, 1½ HP to 200 HP

Immediate Shipment from Stock

INLAND EQUIPMENT CO.
1608 Harrison St., P. O. Box 477
Nashville 2, Tennessee

LOCOMOTIVES

1—80 ton Baldwin 0-6-0 separate tender switcher, built 1925, A.S.M.E. boiler, piston valves, Walschaertes valve gear, overhauled and up to date on all I.C.C. requirements.

1—79 ton American 0-6-0 separate tender switcher, built 1920, superheated boiler, piston valves, Walschaerts valve gear, rebuilt and brought up to date on all I.C.C. requirements.

1—26 ton American 0-4-0 saddle tank, standard gauge, A.S.M.E. boiler, entire new firebox, completely overhauled, coal burner.

1—20 ton Whitcomb diesel-mechanical 36" gauge locomotive, four wheel type. This locomotive built in 1936 and has had only light service. It is completely rebuilt with new wheels, chains, sprockets, reversing gear, and improved type bronze clutch plates. Caterpillar V-8 engine, 4 speeds each way, link-and-pin couplers.

1—Westinghouse 10½" locomotive type cross-compound air compressor, rebuilt, suitable for either locomotive or stationary installation.

• • •

BIRMINGHAM RAIL & LOCOMOTIVE CO.
BIRMINGHAM 1, ALABAMA

FOR SALE
COMPRESSORS:

445 cu. ft. Gardner-Denver, mod. WBH 2-stage, elec. driven. Package unit, like new.
9 x 8 Ingersoll-Rand BRI stationary compressor, with or without power.
1050 cu. ft. Sullivan Angle Compound compressor, direct connected to 240 HP Fairbanks model 32 engine.

POWER UNITS

100 HP Murphy Diesel mod. ME-4, 1200 RPM
135 HP Murphy Diesel mod. ME-6, 1200 RPM
135 HP Fulton Diesel, 600 RPM
130 HP Caterpillar Diesel, D-13000
150 HP Fairbanks, 8¾x10½ dredging engine
240 HP Fairbanks, mod. 32, cold start
300 HP Fairbanks, type Y, style V, with clutch & pulley.

WHERE YOU WILL FIND WHAT YOU WANT IN POWER EQUIPMENT

GENERAL MACHINERY & EQUIPMENT COMPANY
809 Woodland Ave. Kansas City 6, Mo.
Telephone Victor 0018

1—20-ton WHITCOMB 36" Ga. Diesel Locomotive—rebuilt.

1—78-ton BALDWIN Type 0-6-0 Standard Ga. Side Tank Locomotive—new 1923—rebuilt.

1—80-ton BALDWIN Type 0-6-0 Standard Ga. with separate tender —rebuilt.

1—20-yd. WESTERN Air Dump Car, Vertical Cylinders, reconditioned.

1—20-ton BROWNHOIST 8 wheel Loco. Crane—1921 50' boom—DD—Excellent condition.

B. M. WEISS COMPANY
Girard Trust Company Building
Philadelphia 2, Pennsylvania

Pioneer Portable Crushing Outfit, 18x 24" roller bearing Crusher.
24x50" Champion, 28x36" Webb City, 14x36" Cedar Rapids and Austin #440 24x36" Traylor Jaw Crushers.
One TY Traylor 2'4" and 2 Austin Model 105, one #6 fine reduction and one #8 Superior McCully Gyratory Crushers.
Two Jeffrey 36x42" Type A Hammer Mills with Motors.
Three Allis Chalmers, 36x16" Dbl. Roll Crushers MD.
Four 4x10' Tyler Hummer Sgl. Deck Vib. Screens.
One 4x10' Kennedy Dbl. Deck Vib. Screen.
4—24"x18' Lewistown Screw Sand Washers.
Boyd "Special" 6-mold Dry Press with feeder, Model BB 4 Mold.
330 HP Winton 240V AC Diesel Gen. Set.
Barber Greene and Nelson Bucket Loaders.
Two Bucyrus Erie Diesel Caterpillar Cranes.

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Mid-Continent Equipment Company
710 Eastgate Pa. 2200 St. Louis 5, Mo.

Pullshovel Attach. for Lorain 75A or B.
20 ton Plymouth Loco.-Gas-Std. Ga.
50 HP Electric Hoists.
1 Yd. Round Shaft Buckets.
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75	G. E.	I-M	440	900
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4x4x5/16x12'-0"
3x3x ½x13'-0"

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DERRICKS

4—Steel guy derricks. 1—20 ton Insley, 115' mast, 100' boom. 2—20 ton American steel guy derricks. 1—110' mast, 110' boom; 1—100' mast, 90' boom. 1—15 ton American steel derrick, 83' mast, 75' boom. 1—5 ton Terry Guy Derrick, 70' mast, 60' boom.
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30"	5	1/8"	1/16"
24"	5	1/8"	1/32"
24"	4	1/8"	1/32"
20"	5	1/8"	1/32"
20"	4	1/8"	1/32"
18"	4	1/8"	1/32"
16"	4	1/8"	1/32"
14"	4	1/16"	1/32"
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1"	25 "	10.00	3.50 "
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MISSISSIPPI VALLEY EQUIPMENT CO.
513 Locust St. St. Louis 1, Mo.

LIQUIDATION
CHALK & ROCK GRINDING PLANT

1—Chrystie 80"x45' Rotary Dryer.
1—Oliver 8'x10' Rotary Vacuum Filter.
1—Hardinge 6'x48" Conical Mill.
1—Tube Mill, 5'x15'.
2—Rotary Screens 2'x5'.
2—Dorr 15' Bowl Classifiers.
2—Dorrco 4" Diaphragm Pumps.
1—Sturtevant 36" Rock Emery Mill.
1—Sprout-Waldron 800 lb. Dry Mixer.
1—Gruendler Hammer Mill, 24" D. x 12" F.
10—Centrifugal & Rotary Pumps.
Only Partial Listing
Send for Bulletin No. L-25

STEIN EQUIPMENT COMPANY
426 Broome St. New York 13, N. Y.

FOR SALE — PLANT

Naranja Rock Company, Naranja, Florida, has been completely modernized and is all diesel electric. Trap rock has just been discovered.

Price $150,000.

SURPLUS — FOR SALE

In Wisconsin
Thew-Lorain 75-A Combination Shovel and Crane

•

IN IOWA
30 ton Davenport Diesel Locomotive
Standard Gauge—Late Model

•

In Missouri
Thew-Lorain 75-A Shovel
P&H "400" Combination Shovel and Dragline
Two Mack 7½ ton chain drive Dump Trucks

•

Manley Sand Company, Rockton, Illinois

CRUSHERS - ELEVATORS
SCREENS - CONVEYORS

1—7½"x13" Champion Jaw Crusher.
2—9"x15" Champion Jaw Crusher
1—10"x20" Champion Jaw Crusher.
3—12"x26" Champion Jaw Crusher
1—12"x20" Buchanan Jaw Crusher.
1—4½" Traylor Gyratory Crusher.
1—No. 2F Telsmith Gyratory Crusher.
1—S-A-9" loop Redler Elevator.

JOHNSON & HOEHLER, INC.
Lansdowne, Penna.

DIESELS
ROBERT SCHOONMAKER
Port Washington, Long Island, N.Y.
Phone Roslyn 1220

ATLAS IMPERIAL
200 H.P. Power Unit
Model 6ES-668
6 cylinder, 514 RPM, Clutch
Heavy Steel Skid Mounted
Stock Delivery

A. G. SCHOONMAKER COMPANY
50 Church St., New York 7, N. Y. Ph. Worth 2-0455

BINS: 1—150 ton, 3 compartment, Aggremeter Bin, 20 x 20 x 38, with 31,000 lbs., three beam scale and 5 yd. hopper.

1—200 bbl. Cement bin, bucket elevator, screw feeder, electric scale, etc.

LOCOMOTIVE CRANES: 1—20 ton and 1—45 ton, National Board boilers, double drums, air brakes. For sale or rent.

REDUCTION CRUSHERS: Traylor 4 ft., type TY, with motor, V-belt drive, etc., complete. Also, Traylor 2 ft., type TY, and 1'8".

ROLL CRUSHERS: Traylor and Allis Chalmers Crushing Rolls, 12 x 20 and 18 x 42.

JAW CRUSHERS: 12 x 24 to 48 x 60.

HAMMER MILL: Dixie Mogul 20 x 24, V-belt drive, with breaker plate and extra hammers.

LOCOMOTIVE: 80 ton, 6 wheel, Switcher with tender, thoroughly modern, excellent condition.

VIBRATOR FEEDER: Jeffrey type FB-4, size 47" x 84", complete with M.G. set.

TRACK SHIFTER: Nordberg, gasoline driven, standard gauge.

ELECTRIC SHOVEL: Bucyrus Erie 120-B, Ward Leonard control equipment, 3 phase, 60 cycle, 2300 volt.

COMPLETE SAND & GRAVEL PLANT including 12" electric Dredge, with cutter, Bins, Scale, Pipe, Crane, etc. Send for complete inventory.

SCREENS: Robins Gyrex 24 x54; 48 x 144; 4 x 12; single deck.
Robins Vibrex 48" x 120", double deck.

Simplicity 4 x 12, single deck.
Nordberg 2 x 6; 3 x 10; 4 x 8; single deck, Flat Screens.

TRUCKS: 6—Euclid 18FD, 15 ton capacity, 10 yd. body, end dump, heavy duty, 200 H.P.

Cummins, supercharged, Diesel Motors; tires—front 12 x 24, 16 ply; tires—rear 14 x 24, 20 ply; built December 1942.

TRANSIT MIX TRUCKS: 12—Fords, Federal & International, with 3, 3½ and 4 yd. Ransome and Jaeger, separate powered, Mixers; all 1942 models.

OVERHEAD ELECTRIC CRANE: 1—7½ ton Shepard, four motor, bucket operating, Crane, 36' span, 550 volt, D.C., cage control.

TUBE MILL: 1—5' x 22'.

MINE HOISTS: 1—150 H.P., drum 72 x 72". 1—450 H.P., drum 10' dia., 7' face. 1—600 H.P., 96" dia., 116" face. 1—120" dia. x 120" face with 500 H.P. motor.

All 3 phase, 60 cycle, 2200 volt.

WELL DRILL: 1—Keystone 6", all steel, full crawler tread, gasoline powered.

PORTABLE WELDERS: 25—Portable 150 to 300 amps., 440 volt, A.C.

A. J. O'NEILL
Lansdowne Theatre Building
LANSDOWNE, PA.
Phila. Phones: Madison 8300-8301.

FOR SALE

3—GATES No. 8 Style "L" Gyratory Crushers
1—8 x 15 Jaw Crusher
1—10 x 20 Jaw Crusher
1—12 x 24 Jaw Crusher
3—No. 7 McKierman-Terry Pile Hammers.

• •

W. M. SMITH & COMPANY
P. O. Drawer 1711
Birmingham 1, Alabama

FOR SALE

2 Model WBK Gardner-Denver 500 cubic foot diesel air compressors
1 100 KW Murphy Diesel 160 HP AC generator set
1 Rex 160 Pumpcrete with pipe
2 P & H 400 ampere gas driven welding machines
1 27E Multifoote Paver
2 Mutual Engineering 3 yard agitators mounted on 36" gauge railroad wheels
7 Ingersoll-Rand DA30 power feed drifters with 1" x 4½" hex chucks
5 Gardner-Denver CF-79 automatic feed drifters with 1" x 4½" hex chucks
1 Western blower with 50 HP electric motor, 440 volt, 3 phase
1 Root-Connerville positive type pressure blower
8 5 yard steel, side dump cars—36" gauge
2 GE battery locomotives, type LSBE, class 2-c-6, 2400 lb. D.B. pull
3 91 cell Exide batteries for battery locomotives
1 GE DC generator with motor for charging locomotive batteries
1 Gardner-Denver, model G-1 detachable bit grinder
1 10 KW Kohler light plant
1 2" Ingersoll-Rand water pump with 50 HP electric motor, 440 volt, 3 phase
5 1941 K6 International 4 yard dump trucks

Miscellaneous paving breakers and jackhammers with hose and drill steel, three conductor rubber covered electric cable, No. 2, No. 8 and No. 10, 2" and 3" water hose, 2", 3" and 4" pipe, pipe fittings, etc.

WIXSON & CROWE
REDDING, CALIFORNIA

CRUSHER PLANT
Farrel 60" x 48" jaw crusher and feeder; No. 17 and No. 38 Kennedy Gyratory; other items. Sold as complete plant only.

JAW CRUSHERS
Traylor 24" x 36"
Cedar Rapids 36" x 14"
Reliance 10x30 with some extra spare parts
Pioneer 15" x 36" overhead eccentric
Farrel 18" x 36"
Cedar Rapids Kubit Breaker No. 3-6
Stedman Fdry. & Mach. Co. Type B 20" x 16"
Acme Model 16D 16" x 32"

GYRATORY
Allis-Chalmers 42", excellent condition
Allis-Chalmers Superior McCully 8"
Allis-Chalmers Superior McCully 6"
Traylor Model TY 9" feed
Kennedy Van Saun Model 2SS
Traylor Model 410 TZ

ROLL AND HAMMER CRUSHERS
Allis-Chalmers double roll crusher 54" x 20"
Good Roads roller bearing crusher 15" x 30"
McLanhan & Stone double roll fine crusher 18" x 24"
Jeffry 30" x 24" Type A Pulverizer
Jeffry 18" x 24" Hammermill

SHOVELS—CRANES
Bucyrus-Erie 50B steam high lift shovel
Bucyrus-Erie 42B steam shovel 1½ yd.
Bucyrus-Erie AA air tunnel shovel ⅝ yd.
Marion 450 steam shovel 1¼ yds. cap.
Marion 450 gas-elec. shovel 1¼ yds. cap.
P&H 650 Diesel dragline 1¼ yd.
P&H Model 600 crane and shovel
Marion Model 331 shovel, ¾ yd.
Buc.-Erie 20B Air tunnel shovel ⅞ yds.
P & H 650 shovel-crane
Byers 62 Diesel shovel-crane-pull shovel.

LOCOMOTIVES—CARS
American 45 ton, Saddle Tank
Vulcan 25 ton side saddle tank, steam, std. gauge
Plymouth 30 ton standard gauge Saddle Tank
Vulcan 30 ton Steam, Saddle Tank
Porter 13 ton, Steam Saddle Tank, 36" gauge
Baldwin Westinghouse 8 ton, 36" ga. Battery
Vulcan 6 ton, 36" gauge, gas.
3—Western Steel 20 yard Air Dump Cars

TRACTORS—BULLDOZERS
Allis-Chalmers HD7 with trailbuilder.
Allis-Chalmers Model WM with angledozer
Allis-Chalmers Model HD 7 with hydraulic trailbuilder
Int. Model 1-20 with Hough ½ yd. Loader

MISCELLANEOUS
25 Steel Stone Skips 2-3 yds.
I-R Lyner Model 50 drill sharpener
Rotary Screen 4' x 18' with 40 ft. bucket elevator
Howe 100 ton track scale 36" gauge.
Robbins 4' x 6' double deck vibrating screen.
Kennedy-Van Saun 4 deck Type A 4' x 8' screen.

RICHARD P. WALSH COMPANY
30 Church St. New York, N. Y.

DIESEL GENERATORS
1—Diesel Generator Set, 300 HP, Fairbanks-Morse Diesel, 6 cylinder, Model 32, complete with auxiliaries, 257 RPM, direct connected to 250 KVA. 3/60/480. And others.

AIR COMPRESSORS
1—Ingersoll-Rand Duplex Air Compresser, Type XB. 582 cu. ft., motor driven.

COOLERS AND DRYERS
1—10x90 ft. And others.

CRANES AND SHOVELS
1—P & H 1 yd. Shovel, Gasoline, Reconditioned. And others

LOCOMOTIVE CRANES
All 8 wheel, 50' boom
1—15 Ton Ohio
1—25 Ton Browning, with new undercarriage
1—20 Ton Ohio
1—20 Ton Browning

LOCOMOTIVES
2—70 ton Standard Gauge Baldwin Switching Locomotives—6 wheel. Excellent condition.

RAILROAD SHOVELS
1—2½ Yd. Marion, Standard Gauge—steam
1—2½ Yd. Bucyrus Erie, Standard Gauge—steam
1—4 Yd. Marion, Standard Gauge, Rebuilt.

CRUSHERS
2—No. 5 Gates Gyratory Crushers, Style D. Others—various types and sizes.

CEMENT KILN GUNS
2—Remington Arms Cement Kiln Guns

HOISTS
1—S. Flory Mfg. Co. Single drum Hoist. Handles 11 ton car up 12% grade 500 feet per min.

KILNS
1—8 x 9½ x 180 ft. And others.

LOCOMOTIVE AND CARS
1—4 ton Vulcan Iron Works, Class AW-4, Worm Gear Gasoline Locomotive 36" gauge.
6—5 yd. Koppel 2-way Dump Cars, 36" gauge.

HAMMER MILLS
Various Sizes.

DRILLING EQUIPMENT
1—No. 33 Ingersoll-Rand Leyner Drill Sharpener
1—Improved Type No. 22 electric power Loomis Machine Company Clipper Drill complete with motor.
2—Ingersoll-Rand DCR No. 430 Drills
2—Denver-Gardner Company (Turbo-Waugh) No. 37 Drills
4—Denver-Gardner Company (Denver-Waugh) No. 95 Drills

FEEDERS
2—Bailey Pulverized Coal Feeders, Type No. 2, complete with steel hoppers, 8½ ft. dia. x 12 ft. cone bottom.

GRINDING EQUIPMENT
3—5½ x 20' F. L. Smidth Tube Mills, Silex lined.
3—5' x 22' Silex Lined Tube Mills
1—5' x 10' Allis Chalmers Tube or Ball Mills
3—Giant Griffin Mills

ELECTRIC MOTORS AND MG SETS
Large Stock, rebuilt, A.C. or D.C. 25 and 60 cycle.

TRACK SCALE
1—Homestead (Carnegie-Illinois Steel) Standard Track Scale, 46'-100 ton capacity. Complete.

TURBINE
1—100 HP Westinghouse Turbine, 2700 RPM, direct connected to 100 HP, Westinghouse Gear Reducer. Ratio 3 to 1.

Specialists in Cement and Quarry Equipment

WEBBER
EQUIPMENT COMPANY
17 East 45th St. MU. 2-6511
NEW YORK 17 N. Y.

FOR SALE

1—3 ton per hour Kuntz Hydrator
1—5 ton per hour Kuntz Hydrator
Each replaced for larger sizes. These are rebuilt and 100% efficient—90% new.

1—3 ton per hour Clyde Batch Hydrator
1—6 ton per hour Clyde Continuous Hydrator

We have a number of lime feeders and a number of hydrate feeders.
1—2½ yard size dump car 30" gauge track. Track gauge can be made to suit.
1—Portable Ingersoll Rand Air Compressor—315 cu. ft. per minute. Waukegan engine. First class condition—ready for use.
One 27S Ransome Mixer on rubber tires—Good condition.
One 212 Gallon Road Grader 12' Blade—Excellent condition.

Lime & Hydrate Plants Co.
50 S. Beaver Street, York, Pennsylvania

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Worthington-Ransome Blue Brute Distributors

By referring to the advertisement on Back Cover, you'll learn the meaning of the (1), (2) or (1-2) beside their names.

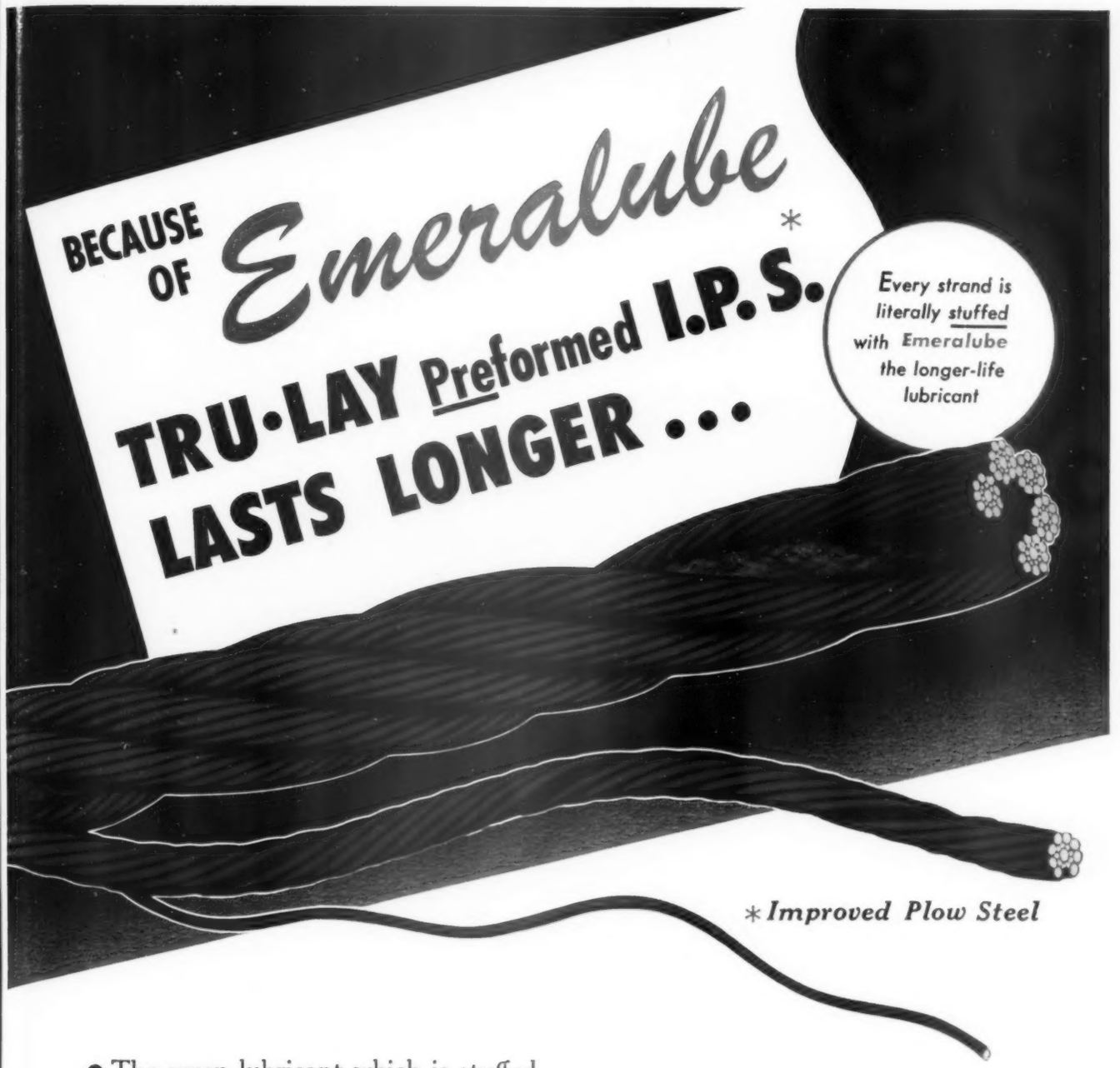
Ala., Birmingham (1) J. D. Pittman Tractor Co.
Ariz., Phoenix (2) Smith Booth Usher Co.
Ark, Fort Smith (2) R. A. Young & Son
Little Rock (1) Kern-Limerick, Inc.
Little Rock (2) R. A. Young & Son
Calif., Los Angeles (1) Garlinghouse Bros.
Los Angeles (2) Smith Booth Usher Co.
San Francisco (1-2) Coast Equipment Co.
Colo., Denver (2) John N. Meade
Denver (1-2) Power Equipment Co.
Conn., Hartford (2) The Holmes-Talcott Co.
New Haven (1) W. I. Clark
Waterbury (1) Contractors Supply Co.
Del., Smyrna (1) King-Burrous
D. C., Washington (1) M. A. Doetsch Machinery Co.
Fla, Jacksonville (1) Julien P. Benjamin, Inc.
Ga., Atlanta (2) Tractor & Machinery Co.
Savannah (1) Morgans, Inc.
Ida., Boise (1-2) Olson Manufacturing Co.
Ill., Chicago (1-2) Chicago Construction Equipment Co.
Chicago (1-2) John A. Roche
Chicago (1) Thomas Hoist Co.
Ind., Fort Wayne (1) American Steel Supply Co.
Indianapolis (2) Reid-Holcomb Co.
Iowa, Des Moines (2) Electric Eng. & Const. Co.
Ky., Harlan (2) Hall Equipment Sales Co.
Louisville (2) T. C. Coleman & Son
Louisville (2) Williams Tractor Co.
Paducah (1) Henry A. Petter Supply Co.
La., New Orleans (1) Ole K. Olson Co.
New Orleans (2) Wm. F. Surgi Equipment Co.
Maine, Portland (1-2) Maine Truck-Tractor Co.
Md., Baltimore (1) Stuart M. Christhilf & Co.
Baltimore (2) D. C. Elphinstone, Inc.
Mass, Boston, Allison (1-2) Clark-Wilcox Co.
Cambridge (2) Field Machinery Co.
Mich., Detroit (1) T. G. Abrams
Detroit (2) W. H. Anderson Co., Inc.
Flint (2) Gransden-Hall & Co.
Muskegon (1-2) Lakeshore Machinery & Supply Co.
Minn., Minneapolis (1-2) Phillippi-Murphy Equipt. Co.
St. Paul (1-2) D. L. O'Brien
Miss., Jackson (1-2) Jackson Road Equipment Co.
Jackson (1) Sco Equipment Co.
Mo., Clayton (1-2) The Howard Corporation
Kansas City (1) Brown-Strauss Corp.
Kansas City (2) Machinery & Supplies Co.
St. Louis (2) W. H. Reaves
Neb., Lincoln (1) Highway Equipt. & Supply Co.
N J., Hillside (2) P. A. Drobach
Newark (1) Johnson & Dealaman
North Bergen (2) Amer. Air Compressor Corp.
N. M., Albuquerque (1-2) Bud Fisher Co.
Albuquerque (1) Morrow & Co.
Roswell (2) Smith Machinery Co.
N. Y., Albany (1-2) Milton-Hale Machinery Co.
Buffalo (2) Dow & Co., Inc.
New York (2) Air Compressor Rental & Sales
New York (1-2) Hodge & Hammond, Inc.
New York (1-2) Railroad Materials Corp.
Olean (2) Freeborn Equipment Co.
N. C., Raleigh (2) Carolina Tractor & Equipt. Co.
N. D., Fargo (1-2) Smith Commercial Body Works, Inc.
O., Cincinnati (1-2) Finn Equipment Co.
Cleveland (2) S. M. Clancey
Cleveland (1) H. B. Fuller Equipment Co.
Cleveland (2) Gibson-Stewart Co.
Marietta (2) Northwest Supply & Equipt. Co.
Toledo (1) Edmund Supply Co.
Toledo (2) M. W. Kilcorse & Co.
Okla., Oklahoma City (2).
Oregon, Portland (2) Andrews Equipment Serv.
Pa., Allentown (2) H. N. Crowder, Jr., Inc.
Easton (2) Sears & Bowers
Harrisburg (2) N. A. Coulter
Oil City (2) Freeborn Equipment Co.
Philadelphia (1) Giles & Ransome
Philadelphia (2) Metalweld, Inc.
Pittsburgh (2) Atlas Equipment Corp.
Wilkes-Barre (2) Ensminger & Co.
York (2) George F. Motters Sons
S. C., Columbia (2) Smith Equipment Co.
Tenn., Knoxville (2) Wilson-Weesner-Wilkinson
Tex., Dallas (1-2) Shaw Equipment Co.
El Paso (2) Equipment Supply Co.
El Paso (1) Mine and Smelter Supply Co.
Houston (2) Dye Welding Supply Co.
Houston (1) McCall Tractor & Equipt. Co.
San Antonio (2) Patten Machinery Co.
San Antonio (1) San Antonio Machine & Supply Co.
Utah, Salt Lake City (1-2) Landes Engineering Co.
Vt., Barre (1-2) A. M. Flanders, Inc.
Va., Richmond (1-2) Highway Machinery & Supply Co.
Wash., Seattle (1) Columbia Equipment Co.
Seattle (2) Star Machinery Co.
Spokane (2) Andrews Equipment Service
Spokane (1) Columbia Equipment Co.
W. Va., Charleston (1) West Virginia Co.
Fairmont (2) Interstate Engineers & Constr., Inc.
Wyoming, Cheyenne (2) Wilson Equipment & Supply Co.

Buy Blue Brutes

Worthington Pump and Machinery Corp.

Worthington-Ransome Construction Equipment Division

Holyoke, Massachusetts


BECAUSE OF Emeralube*
TRU·LAY Preformed I.P.S.
LASTS LONGER . . .
Every strand is literally stuffed with Emeralube the longer-life lubricant
*Improved Plow Steel

● The green lubricant which is stuffed into every strand of American Cable **TRU•LAY** Preformed Wire Rope made of Improved Plow Steel makes that record-breaking rope *still* better. Why—? Because ***Emeralube,*** made to our specifications, clings to the inner wires better, doesn't work out, keeps every wire free from corrosion and able to slip past one another without undue friction. This means longer rope life, better rope service, greater dollar value.

Regardless of the job — for your next rope specify TRU•LAY Preformed ***Emeralube.*** Then you will appreciate the multiple advantages of the best wire rope you can buy.

ARMY E NAVY

ACCO

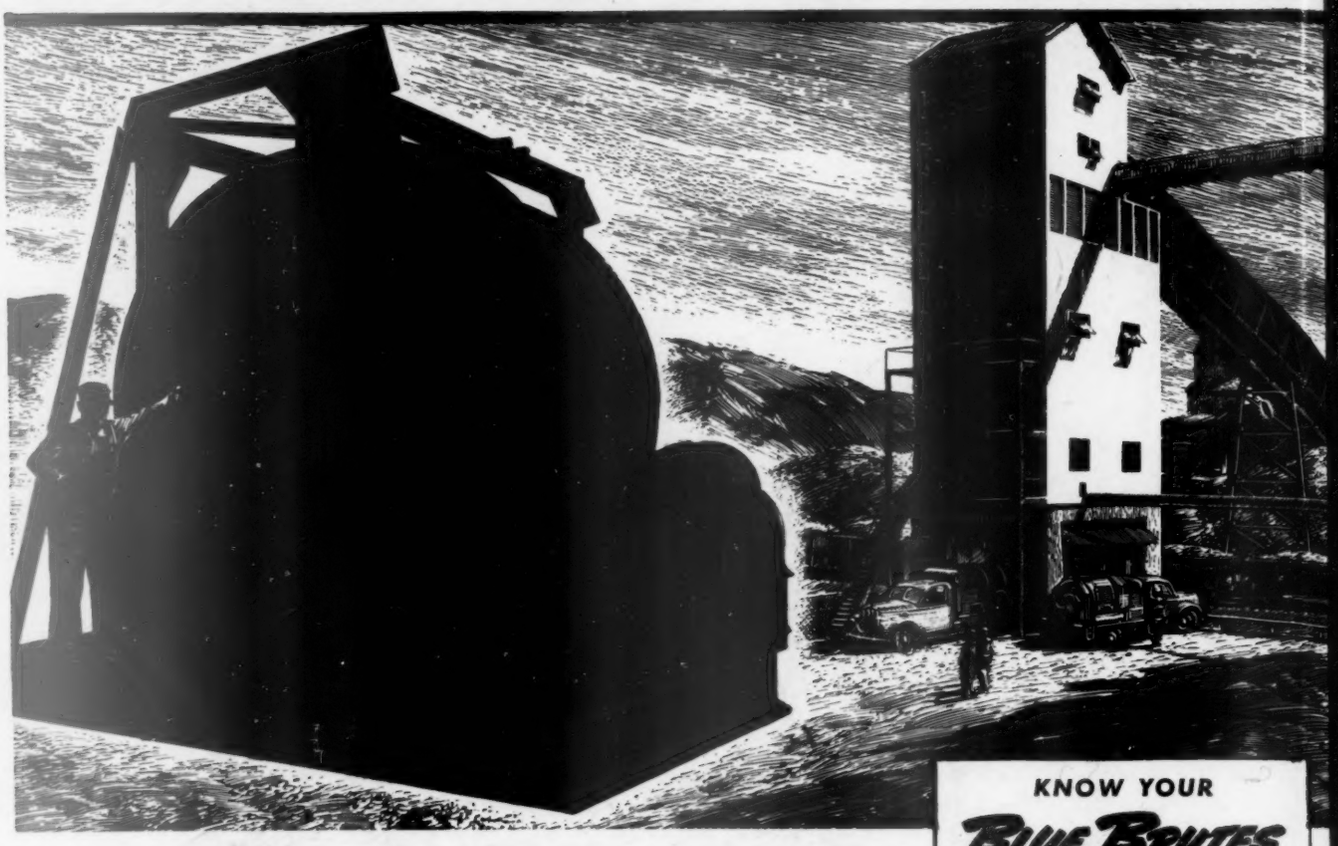
Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Tacoma, Bridgeport, Conn.

AMERICAN CABLE DIVISION
AMERICAN CHAIN & CABLE

ACCO TRADE MARK

In Business for Your Safety

BETTER CONCRETE IN BIG BATCHES AT LOWER COST



If you have your sights set on some of those big construction jobs that loom over the horizon, you'll want to investigate Ransome Blue Brute "Big" Mixers.

Look at their record: Ransome built the first "big" mixer back in 1902 for the U.S. Navy Dept. . . . has pioneered all major improvements ever since. Used for some of the world's outstanding construction projects they are first choice too, for central mix operators. A Blue Brute 126-S Mixer owned by Arundel-Brooks Corp. of Baltimore has mixed more than 2,000,000 yards and is still going strong.

Look at their features: Ransome's exclusive mixing action . . . fast, thorough . . . result of 96 years' mixing experience; spiral cut-off water tank and non-by-passing poppet valves . . . for the accurate water measuring that central mixing plants demand; hydraulically-operated discharge chute . . . simple, compact, trouble-free; car-wheel metal drum rollers and true-circle machined-tracks . . . for maintained accurate alignment of drum with driving mechanism.

Check these and the many other features that make Blue Brute "Big" Mixers your best bet for making better concrete at lower cost.

RB. 13

KNOW YOUR BLUE BRUTES

Your Blue Brute Distributor will gladly show you how Worthington-Ransome Blue Brute construction equipment will put your planning on a profitable basis and prove that *there's more worth in Worthington.* Act now! His name is listed on page **188.** The number beside his name indicates the Blue Brutes he carries.

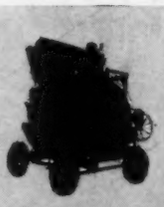
1.
Blue Brutes include: Pavers, Concrete Spreaders**, Concrete Mixers, Concrete Placing Equipment, Big Mixers, Finishing Machines**, Pneumatic Placing & Grouting Equipment, Truck Mixers, Plaster & Bituminous Mixers, and related equipment.

2.
Blue Brutes also include: Diesel, gasoline and electric driven Portable Compressors from 60 to 500 cu. ft. capacity in mountings to suit all jobs; Rock Drills and Air Tools in a wide range of weights and sizes; Contractors' Pumps.**

**Proposed Products

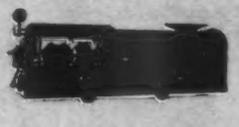
BUY BLUE BRUTES

Truck Mixers
Capacities:
2, 3, 4½, 5½ cu. yds.



Portable Mixers
Capacities:
3½, 7, 10, 14 cu. ft.

Big Stationary Mixers
Capacities:
28, 56, 84, 126 cu. ft.



Pneumatic Placer
Capacity:
7, 14, 28 cu. ft.

WORTHINGTON

*Worthington Pump and Machinery Corporation, Worthington-Ransome Construction Equipment Division
Holyoke, Mass.